

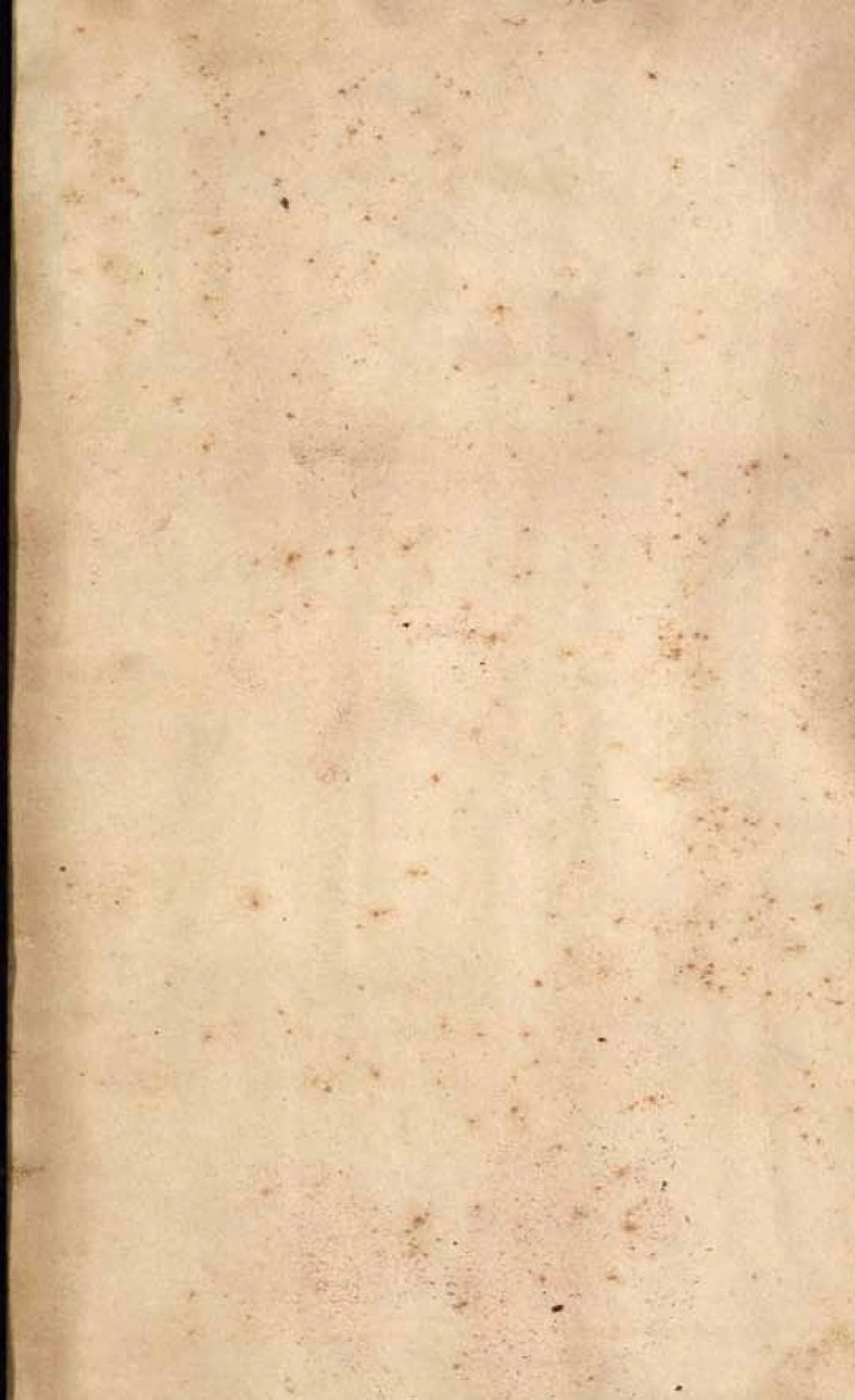
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FIELD MUSEUM OF NATURAL HISTORY

FOUNDED BY MARSHALL FIELD, 1893

PUBLICATION 328

REPORT SERIES

VOL. X, No. 1

ANNUAL REPORT OF THE DIRECTOR

TO THE

BOARD OF TRUSTEES

FOR THE YEAR 1933

32844



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CHICAGO, U. S. A.

JANUARY, 1934

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I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois, _____

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DEPARTMENT OF ZOOLOGY.—Wilfred H. Osgood, *Curator*. MAMMALS: Colin C. Sanborn, *Assistant Curator*; Julius Friesser, C. J. Albrecht, A. G. Rueckert, *Taxidermists*. BIRDS: C. E. Hellmayr, *Associate Curator*; Rudyerd Boulton, *Assistant Curator*; Boardman Conover, *Research Associate*; R. Magoon Barnes, *Assistant Curator of Birds' Eggs*; Ashley Hine, *Taxidermist*. AMPHIBIANS AND REPTILES: Karl P. Schmidt, *Assistant Curator*; Leon L. Walters, *Taxidermist*. FISHES: Alfred C. Weed, *Assistant Curator*; Leon L. Pray, *Taxidermist*. INSECTS: William J. Gerhard, *Associate Curator*; Emil Liljeblad, *Assistant*. OSTEOLOGY: Edmond N. Gueret, *Assistant Curator*; Dwight Davis, *Assistant*. ARTIST: Charles A. Corwin.

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*DECEASED

ANNUAL REPORT OF THE DIRECTOR

1933

To the Trustees of Field Museum of Natural History:

I have the honor to present a report of the operations of the Museum for the year ending December 31, 1933.

Like the preceding year, 1933 was marked by severely adverse financial conditions, which caused a further decline in the value of securities held in Field Museum's endowment funds, as well as a reduction in income from endowments, contributions, and memberships. However, revenue from admissions and sundry receipts increased \$41,215.62, due entirely to the large number of visitors who came to Chicago for A Century of Progress exposition.

The budget adopted was very much reduced, and economies were put in force throughout the year, with the result that expenses were kept well below the appropriations, in spite of increased expense incurred through the necessity of handling record attendance during a period of several months.

The increase in paid admissions, and the savings in expenses, together with a special contribution of \$13,272.23, enabled the Museum to reduce notes payable, caused by previous years' deficits, from \$156,100 to \$105,000.

There were no expeditions except those financed by funds especially contributed for that purpose.

Notwithstanding forced economies, service to the public was maintained in full, and never before have so many persons been reached by the educational influences of this institution.

Visitors to the Museum during the year numbered 3,269,390, an attendance exceeding that ever attained in a single year by any museum in the United States, and probably a high record for the entire world. The increase over 1932 attendance is 1,455,188, or 79 per cent. This compares with an increase of 20 per cent in 1932 over 1931. Extra-mural educational activities conducted by the Museum benefited approximately 661,000 persons, mostly children, making a total of more than 3,930,000 for whom the institution functioned as a source of information. It is worth noting also that, impressive as this figure is, it does not take into consideration others, whose numbers are incalculable, reached by the institution indirectly through such media for the dissemination of knowledge as Museum

publications and leaflets, *Field Museum News*, the many accounts of Museum activities published in newspapers and magazines, broadcasts from radio stations, motion picture newsreels, and various other channels.

Of the 3,269,390 visitors to the Museum, only 212,298 or 6½ per cent paid admission. All the rest, numbering 3,057,092, either came on free days, or belonged to classifications such as children, teachers, students, and Museum Members, who are granted free admissions on pay days. The highest attendance for any single day occurred on Thursday, August 24, when there were 65,966 visitors.

Lecturers from the Museum, sent to the schools by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, spoke before 160,750 children in their classrooms and assemblies, the talks being illustrated with stereopticon slides. Daily throughout the school year approximately 500,000 children had available for study in their schools (and also in various community centers and other institutions) the traveling natural history exhibits circulated by the Department of the N. W. Harris Public School Extension of Field Museum. Deliveries and collections of these cases are made on a regular schedule which provides each public school in Chicago, and numerous private schools and other institutions, with two new cases at intervals of two weeks.

In addition to the extension lectures in the schools, the Raymond Foundation provided at the Museum twenty-two moving picture programs and 284 guide-lecture tours for children. These were attended by 37,420 children (included in the Museum's general attendance figures), which, added to the extension lecture attendance and the audiences at various special meetings, brings the total reached by the activities of the Foundation, both inside and outside the building, to 212,179.

Eighteen lectures on travel and science were given on Saturday afternoons during March and April, and October and November, in the James Simpson Theatre, and were attended by 22,787 adults. Also there were provided 422 guide-lecture tours for adults, which were participated in by 13,412 persons.

Captain G. Allan Hancock, of Los Angeles, and Dr. Harry M. Wegeforth, President of the Zoological Society of San Diego, California, were elected Patrons of the Museum. This was done in recognition of Captain Hancock's sponsorship of an expedition which obtained excellent specimens of elephant seals for the Museum, and in recognition of the services of both Captain Hancock and Dr.

Wegeforth in organizing and personally participating in the work of this expedition.

Dr. B. P. Georges Hochreutiner, Director of the Conservatoire et Jardin Botaniques at Geneva, Switzerland, was elected a Corresponding Member of the Museum in recognition of important assistance he has rendered to Field Museum in its joint botanical project with the Rockefeller Foundation. Through Dr. Hochreutiner's cooperation the important collections of type specimens of plants in the institution he heads were made available for photographing, which resulted in an exceedingly important contribution to the collection of type specimen photographs. These now number approximately 26,000 negatives.

Five names were added to the list of Contributors to the Museum. Prince M. U. M. Salie, of Galle, Ceylon, was elected a Contributor in recognition of his gift to the Museum of a collection, valued at \$5,000, of fifty-five precious stones representing the principal varieties found in Ceylon. Mr. Leon Mandel and Mr. Fred L. Mandel, Jr., were elected Contributors in appreciation of their generous contributions of funds which made possible the Mandel-Field Museum Zoological Expedition to Venezuela in 1932. Master Stanley Field Blaschke was elected a Contributor in recognition of a gift of \$1,000 in cash made in his name by his father, Mr. Frederick Blaschke, of Cold Spring-on-Hudson, New York. Miss Malvina Hoffman, of New York and Paris, was elected a Contributor in recognition of the gift of a limestone bust of a Chinese boy which she sculptured.

Mr. Knox Hearne, of New York, was elected a Non-Resident Life Member. A list of Members in all classes will be found at the end of this Report (p. 109).

The Museum suffered a severe loss in the death of Dr. Oliver Cummings Farrington, Curator of the Department of Geology for thirty-nine years. At its meeting held on November 20, the Board of Trustees adopted the following resolution in honor of Dr. Farrington:

"In the death on November 2, 1933, of Dr. Oliver Cummings Farrington, Curator of Geology at Field Museum of Natural History since 1894, the Board of Trustees is sorrowfully aware of the loss of one of the oldest, and one of the ablest, members of the Museum Staff. Dr. Farrington had been associated with this institution, as head of its Department of Geology, from the very beginnings of its active functioning as a scientific organization.

"In scientific circles Dr. Farrington was regarded with extreme respect and admiration not only for the very successful work he did in building up Field Museum's geological collections and activities, but also as a great scholar, and one of the world's foremost authorities on gems and gem minerals, and on meteorites.

"The tremendous breadth of his knowledge of all divisions of the science of geology, and his outstanding skill in museum work, have their permanent monument in the exhibits occupying the various halls of his Department, which bear throughout the evidences of his mastery of the subjects they illustrate. Learned to the highest degree, he was supremely possessed of that faculty which makes the ideal museum man—the ability to translate his erudition into forms easily intelligible to the least-read layman. He was, thus, a great educator, spreading knowledge to the millions of people visiting the exhibits for which he was responsible.

"Dr. Farrington frequently went out into the field to collect material for the Museum, his most important undertaking of this kind having been as leader of the Marshall Field Geological Expedition to Brazil in 1922-23. He was the author of important scientific publications issued by Field Museum and other publishers. He had achieved note as a teacher of science in academies and universities, and was an officer and fellow of prominent scientific societies. Great expositions sought and received his advice and assistance in their scientific divisions. Some years ago the Trustees of Field Museum elected him a Life Member of this institution.

"In his passing the Trustees recognize the loss of a man of broad intellect and high character, whose devotion to science resulted in a career of splendid achievements.

"Therefore, be it resolved, that this expression of the Trustees' appreciation of Dr. Farrington's many years of loyal and valuable service to the Museum and to science, be permanently preserved on the records of the Board;

"And be it further resolved that our deep sympathy be conveyed to his bereaved family, and that a copy of this resolution be transmitted to his widow."

A memorial resolution was adopted also by the Director, scientific staff, and entire personnel of the Museum.

News of the death on April 20 of Dr. William Henry Holmes was received with regret. Dr. Holmes was the first Curator of Anthropology of this institution, having joined the staff in 1894,

and served for several years. Later he became head curator of anthropology of the United States National Museum, and director of the National Gallery of Art in Washington.

At the Annual Meeting of the Board of Trustees, held January 16, President Stanley Field was re-elected for the twenty-fifth time; Second Vice-President Albert A. Sprague was elected First Vice-President, filling the vacancy caused in that office by the death, in August, 1932, of Mr. Martin A. Ryerson; Third Vice-President James Simpson was elected Second Vice-President, and Trustee Albert W. Harris was elected Third Vice-President. Mr. Solomon A. Smith, Treasurer and Assistant Secretary, and the incumbent Director and Secretary, were re-elected to their respective offices. Two vacancies on the Board, caused by the deaths in 1932 of Trustees William V. Kelley and Martin A. Ryerson, remained unfilled during 1933.

The year was noteworthy for the number of exhibits which were completed and opened to public view. The most important of these were the sculptures representing the principal races of mankind in Chauncey Keep Memorial Hall (Hall 3), and the restorations illustrating types of prehistoric men and various phases of their cultures in the Hall of the Stone Age of the Old World (Hall C). Both these new halls are unique in their fields—no other institution has exhibits treating these subjects on the scale undertaken here. Their preparation involved years of research and extensive expeditions to gather data and material in various parts of the world.

Chauncey Keep Memorial Hall has been made possible by a large bequest from the late Chauncey Keep, for many years a Trustee of the Museum, and by generous contributions from Mrs. Stanley Field and Mrs. Charles H. Schweppe, of Chicago, and Trustee Marshall Field. The hall contains nearly a hundred life-size sculptures, including full-length figures, busts, and heads, chiefly in bronze, illustrating the principal racial types of the human species as they exist today, and depicting their physical characteristics. The types shown range from primitive peoples still living in remote jungle places but in danger of extinction in the near future under the advance of the white man's civilization, to the most highly cultured peoples of the world. All the sculptures are the work of Miss Malvina Hoffman, well-known sculptor of New York and Paris, who spent some three years on the task of their execution, traveling practically around the world to obtain the most representative living models of the various races in their native lands. The

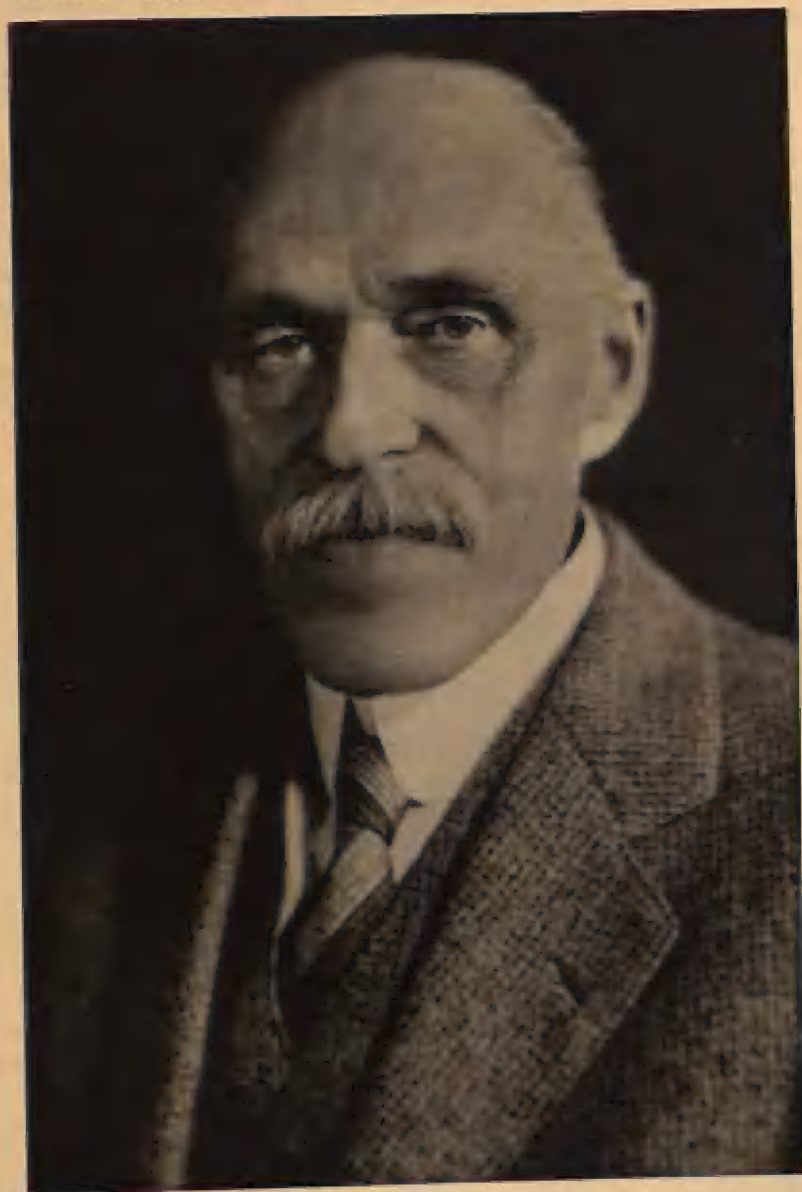
monumental sculpture in the center of the hall is a gift from Mrs. Schweppe. This group of figures, in heroic size, of a white, a black, and a yellow man, symbolizes the "Unity of Mankind."

The various expeditions since 1927, preliminary to the preparation of the Hall of the Stone Age of the Old World, were financed by Mr. Marshall Field. Among other principal contributors to the cost of creation of this hall are Trustees Frederick H. Rawson and Silas H. Strawn. The principal feature of the hall consists of eight reproductions of actual prehistoric sites in Europe, with life-size restorations of men of the various periods represented. These groups are the work of Mr. Frederick Blaschke, well-known sculptor of Cold Spring-on-Hudson, New York. The backgrounds were painted by Staff Artist Charles A. Corwin. The general plan of the hall was worked out, and its execution supervised, by Assistant Curator Henry Field, in collaboration with Dr. Berthold Laufer, Curator of the Department of Anthropology. The subjects of the groups are the Chellean, Neanderthal, Aurignacian, Solutrean, Magdalenian, Azilian, Neolithic, and Swiss Lake Dweller periods of man's development, covering a span of from about 250,000 down to 8,000 years ago. Supplementing the groups are extensive series of archaeological collections and other exhibits bearing upon man's progress through the ages from approximately one million years ago.

Another important addition to the Department of Anthropology during the year was made by the installation in Alcove A1, between Halls A and E, of a collection representing the ethnology of the aboriginal tribes of Australia. This is probably the largest and most complete collection of Australian aboriginal material in this country.

Several important habitat groups were added to the exhibits of the Department of Zoology. An excellent group of African lions was installed in Carl E. Akeley Memorial Hall (Hall 22). The specimens, a large male, a female, and four small kittens, were obtained by Mr. and Mrs. Marshall Field during a hunting trip they made in Tanganyika in 1930. Staff Taxidermist C. J. Albrecht mounted the animals.

In William V. Kelley Hall (Hall 17) there was installed a group of the great gaur ox or seladang of Asia. These fine animals, rare in museums, make a strikingly beautiful group. Dominating the group is a large bull which fell to the rifle of Colonel Theodore Roosevelt while he was leader of the William V. Kelley-Roosevelts Expedition to Eastern Asia for Field Museum in 1928-29. Other specimens included are a cow presented by the late Charles Rydell of Superior,



THE LATE DR. OLIVER CUMMINGS FARRINGTON

Curator of the Department of Geology from 1894 until his death on November 2, 1933

Wisconsin, and a young calf presented for the group by Messrs. George F. Ryan and George G. Carey, Jr., of Baltimore, who obtained it on one of their expeditions. The group was prepared by Staff Taxidermists Julius Friesser and Arthur G. Rueckert. The background was painted by Artist Corwin.

An exhibit of Florida manatees or sea-cows was placed on view in the Hall of Marine Mammals (Hall N). To prepare this group, specimens of the manatee in fresh natural condition were obtained through the cooperation of the John G. Shedd Aquarium. From these, reproductions were made in cellulose-acetate by Staff Taxidermist Leon L. Walters, assisted by Mr. Edgar G. Laybourne. The method used is that invented by Mr. Walters, and used so successfully in the past for reptiles and for hairless or nearly hairless mammals. By this method the skin is reproduced in such a way as to preserve the finest details of texture and exact shades of color. There are two animals in the group, shown in characteristic attitudes in an underwater scene. The background was painted by Taxidermist Leon L. Pray.

The orang specimens which formerly occupied a square floor case in Carl E. Akeley Memorial Hall (Hall 22) were reinstalled in a built-in case with a semi-elliptical painted background in William V. Kelley Hall (Hall 17). An elaborate tree-top scene in a tropical forest was prepared, and the group, placed in this setting, is very much improved in beauty and realism as compared with its old arrangement. The reinstallation and the painting of the background are the work of Taxidermist Pray.

Another orang exhibit, a single specimen representing the first serious attempt to apply the so-called "celluloid" process to hairy mammals, was added to the systematic collection of mammals in Hall 15. This specimen is partly real, and partly synthetic, and was prepared by Taxidermist Walters. The receipt of a fresh specimen, shortly after its death in a zoo, provided the opportunity for this interesting experiment which has proved highly successful. By means of the special technique employed, the natural skin is replaced in the exhibit by a celluloid-like composition, but the original hair of the animal is imbedded in this composition exactly as it was formerly in the skin. This method has certain advantages over the conventional taxidermy technique in which the dried and tanned skins of animals are used, but it is not designed to displace the earlier methods except for subjects to which it is peculiarly adapted.

A strikingly interesting group placed in Stanley Field Hall is that of the bower bird of New Guinea, for which specimens were obtained by the Cornelius Crane Pacific Expedition of Field Museum in 1929. The group includes the complicated bower, decorated with colorful fruits and berries, built by the bird. The male is seen performing his courtship dance while the female looks on through the bower. The birds were mounted by Assistant Taxidermist John W. Moyer.

In Hall 21 there was installed a screen of birds-of-paradise, including specimens obtained by the Crane Expedition, the Kelley-Roosevelts Asiatic Expedition, the Suydam Cutting Sikkim Expedition, and the Field Museum-*Chicago Daily News* Abyssinian Expedition. These were mounted by Mr. Moyer. Five screens of North American birds, prepared by Taxidermist Ashley Hine, were also added to Hall 21.

An unusually large and fine specimen of bison bull, presented to the Museum by Colonel Wallis Huidekoper, owner of the American Ranch at Twodot, Montana, was placed on exhibition in the collection of horned and hooved mammals in George M. Pullman Hall (Hall 13). The specimen came from a large herd on Colonel Huidekoper's ranch. It weighed about 2,300 pounds when alive. Taxidermist Julius Friesser mounted it.

An exhibit of armadillos, anteaters, sloths, and their relatives was installed in Hall 15. The specimens include various species collected by the Marshall Field Brazilian Expedition in 1926, an aardvark taken on the Harold White-John Coats African Expedition in 1929, and a specimen of Temminck's pangolin presented to the Museum by the late Robert T. Everard, of Detroit. Also added to Hall 15 was a case containing all the more important species of dogs (exclusive of domestic varieties) and wolves of the world. These were prepared by Taxidermist Albrecht.

A number of reproductions of interesting fishes were installed in Albert W. Harris Hall (Hall 18). Among these are angler-fish, sargassum fish, Labrador sea trout, wolf herring and bonefish. The original specimens of some of these were obtained through the cooperation of the John G. Shedd Aquarium, others were collected by expeditions, and the bonefish was presented to the Museum by Colonel Lewis S. Thompson of Red Bank, New Jersey. They were prepared by Taxidermists Pray and Rueckert.

To the osteological exhibits in Hall 19 there were added screens of skeletons of monotremes, marsupials, and edentates, prepared by

Assistant Curator Edmond N. Gueret and his assistant, Mr. D. Dwight Davis.

An unusual exhibit, showing the fossil skeleton of a ground sloth in the earth as it was discovered by the Marshall Field Paleontological Expedition to Argentina and Bolivia in 1927, was installed in Ernest R. Graham Hall (Hall 38). This exhibit, with its explanatory label, serves to answer questions, often asked by visitors, as to how paleontologists find fossil skeletons. The group was prepared by Mr. Phil C. Orr of the staff of the Department of Geology.

A collection of rare elemental gases of the argon family presented by the Air Reduction Sales Company, of Chicago, was installed in the corridor connecting Hall 36 and Frederick J. V. Skiff Hall (Hall 37). The gases are seen, glowing with the bright colors they radiate when used in neon and similar signs, by exciting them to luminosity with an electric current which passes through the tubes containing them when a button on the exhibition case is pressed. Five tubes contain the gases argon, neon, helium, krypton, and xenon, and three other tubes contain mixtures of these.

To the meteorite collection in Hall 34 there were added eighteen specimens from the group of meteorite craters at Henbury, Australia, which show meteorites and also the lava and silica-glass into which some of the rock of the crater walls has been changed by the heat resulting from the impact of gigantic meteorites. Specimens representing these features are comparatively rare, as there are only five craters of recognized meteoritic origin in the world. Also in Hall 34 there was placed an exhibit illustrating, by five specimens showing various stages, the method of cutting a "varnistar" from rock crystal. The material for this exhibit was presented to the Museum by Mr. Stephen Varni, of New York. Another exhibit added to Hall 34 consists of two large crystals of selenite in the form of prismatic columns, so striking in appearance that they have been given a case by themselves in the mineral collection.

The exhibit of liquid petroleum products formerly in Hall 36 has been replaced, through the courtesy of the Standard Oil Company (Indiana), by a synoptic collection intended to indicate the wide ramifications of petroleum products and the many ways in which they affect our daily lives.

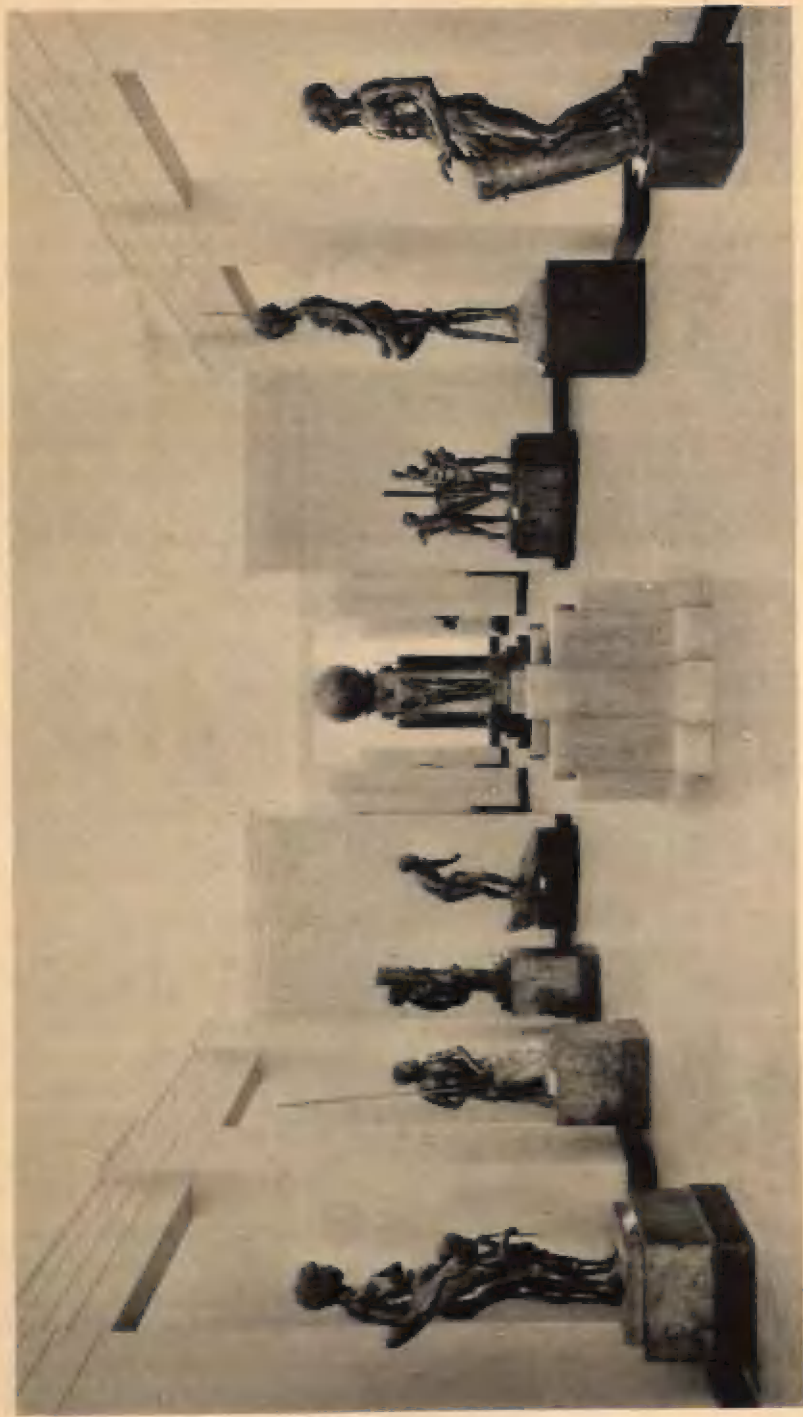
In the Department of Botany a plantation rubber tree showing the manner in which the bark is cut in shallow V-shaped incisions, and a wild rubber tree showing the effects of tapping in the crude manner formerly in use on the lower Amazon, were placed on exhibi-

tion among the raw plant materials in Hall 28. Shown with these are tools used for making the incisions, and specimens of Parà rubber in the form in which it comes to market. The exhibit was made possible by gifts of material from Van Cleef Brothers and the Wilkinson Process Rubber Company of Chicago, and by collections obtained by the Marshall Field Botanical Expedition to the Amazon in 1929. To illustrate the botanical characters of the *Hevea* rubber tree a fruiting branch of this tree, obtained by the Amazon expedition, was reproduced in the Plant Reproduction Laboratories of the Museum.

To the Hall of Plant Life (Hall 29) have been added several exhibits prepared by the Plant Reproduction Laboratories. Among these may be mentioned the Panama hat palm; a large aquatic aroid, *Montrichardia*, of tropical America, best known as the aninga; a branch of the cupuassu tree, related to the cacao; a branch of biribà which bears one of the largest and most delicious of tropical fruits; and a branch of the sweet gum known as liquidambar. The laboratories also produced a reproduction of a tobacco plant which has been placed on exhibition in Hall 28. A number of other additions were made to the economic collections in Halls 25 and 28.

Besides the installation of many new exhibits, the work of reinstallation of the collections in many halls continued in all departments. In many instances reinstallation included the addition of new material. Detailed accounts of this work will be found under the various Department headings in this Report. Halls in which especially extensive reinstallations were made include Edward E. and Emma B. Ayer Hall (Hall 2) devoted to Greek, Roman, and Etruscan archaeology; Hall 7, archaeology of the southwestern United States; George T. and Frances Gaylord Smith Hall (Hall 24), Chinese archaeology; H. N. Higinbotham Hall (Hall 31), gems and jewels; Joseph N. Field Hall (Hall A), Melanesian ethnology; and the Hall of Plant Life (Hall 29).

Although expeditions and field work were eliminated from the budget, the Museum benefited from a number of expeditions financed privately in the interests of the institution. Captain G. Allan Hancock, of Los Angeles, organized and led, aboard his scientific cruising ship, *Velero III*, an expedition to Guadalupe island off Mexico's west coast, which obtained specimens for a proposed habitat group of elephant seals. Dr. Harry M. Wegeforth, President of the Zoological Society of San Diego, California, was also instrumental in the organization of this expedition. Part of the



A SECTION OF CHAUNCEY KEEP MEMORIAL HALL.
Races of mankind sculptured in bronze by Malvina Hoffman.

expenses were paid with money from the Mrs. Emily Crane Chadbourne Fund. Two members of the Museum's taxidermy staff, Messrs. Julius Friesser and Frank C. Wonder, accompanied the party. Five fine elephant seals, ranging in weight from 250 to 5,000 pounds, were collected. The Museum is indebted to the Mexican government for its cooperation in granting permission for the hunting of these animals which are under strict protection.

The Field Museum Archaeological Expedition to the Southwest, financed from funds provided by the late Julius and Augusta N. Rosenwald, conducted its third season of excavations on the site of the Lowry ruin in southwestern Colorado. Dr. Paul S. Martin, Assistant Curator of North American Archaeology, was leader, as in the expedition's two previous seasons in the summers of 1930 and 1931. Additional rooms of the pueblo were laid bare and large collections of artifacts were obtained during the 1933 season.

A zoological expedition sponsored by Mr. Leon Mandel, of Chicago, to make extensive collections of birds, mammals, reptiles, and amphibians, sailed for Guatemala in November. This expedition, known as the Leon Mandel Guatemala Expedition of Field Museum, will continue its work for several months of 1934. Personnel includes Mr. Karl P. Schmidt, Assistant Curator of Reptiles, as leader; Mr. Emmet R. Blake, ornithologist; Mr. F. J. W. Schmidt, mammalogist; and Mr. Daniel Clark, general assistant. Mr. Mandel himself joined the party late in the year to participate in part of its work.

Toward the end of the year an expedition, which is to begin operations in 1934, was organized. Mrs. Oscar Straus, of New York, is its sponsor, and it will be known as the Straus West African Expedition of Field Museum. The expedition will collect birds and mammals in Senegal, Nigeria, and Angola. Mr. Rudyerd Boulton, Assistant Curator of Birds, will be leader. Other members of the party will be Mr. Frank C. Wonder of the museum's taxidermy staff, Mr. John F. Jennings, of Chicago, as photographer, Mrs. Boulton, and, for part of the trip, Mrs. Straus herself.

A number of rare fossil mammals and reptiles were obtained for the Museum by Mr. Bryan Patterson, Assistant in Paleontology, while on a field trip in western Colorado during the summer. He was accompanied by Messrs. James H. and Clayton A. Quinn. Of special importance in the collection are skulls and parts of skeletons of an animal that has been one of the rarest of fossil mammals—

Titanoides faberi, representative of the Amblypoda, an extinct order of primitive hoofed mammals.

Mr. Sharat K. Roy, Assistant Curator of Invertebrate Paleontology, made a valuable collection of Cambrian and Cretaceous fossils in Pennsylvania, New York, and New Jersey. He was assisted on the expedition by Mr. Floyd Markham, of Chicago.

Great progress was made in the work of photographing type specimens of Central and South American plants in European herbaria—a joint project of the Rockefeller Foundation and Field Museum, in charge of Assistant Curator J. Francis Macbride. A full report on this subject will be found under the heading Department of Botany, Expeditions and Research (p. 44).

Arrangements were made with Rear-Admiral Richard E. Byrd, U.S.N., to collect for the Museum, during the course of his current expedition to the antarctic regions, eight or ten specimens of emperor penguin for a proposed habitat group. The expenses in connection with this project were provided for from the zoological fund contributed by Mrs. Emily Crane Chadbourne.

Various benefactions, both in money and materials, were received during the year, for which grateful acknowledgment is herewith made. Funds received by gift are detailed below:

President Stanley Field contributed \$13,272.23 towards liquidation of the building fund deficit.

Mr. Marshall Field gave \$9,000, his final contribution toward payment of expenses in connection with Chauncey Keep Memorial (Hall 3).

Mrs. James Nelson Raymond, of Chicago, contributed \$3,000 which was applied toward the operating expenses of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, of which she is the founder, and which she has generously supported ever since its establishment in 1925.

Mr. Leon Mandel, of Chicago, is the donor of \$4,351.30 to meet the expenses of the Leon Mandel Guatemala Expedition of Field Museum.

Mrs. Charles H. Schweppe, of Chicago, made a gift of \$3,000 to enable the Museum to purchase certain of the sculptures now in Chauncey Keep Memorial Hall.

Mrs. E. Marshall Field, of New York, contributed \$5,000 toward the general operating expenses of the Museum.

A gift of \$250 was received from Mr. Henry J. Patten, of Chicago.

Mr. John P. Kellogg, of Chicago, made a gift of \$150 toward the expenses of a zoological expedition to Guatemala. Mr. B. E. Axe and Mrs. Frances C. Axe, of Seattle, Washington, gave \$70 for the purchase of a gold nugget.

Miscellaneous cash contributions totaling \$9,227.19 were received in addition to the above-mentioned individual gifts.

A bequest was left to the Museum by the late Mrs. Edward D. Moeng, of Chicago.

From the Rosenwald Family Association the Museum received \$7,909.49 in payment of all accrued interest to October 1, 1933, on the bequest of the late Mrs. Augusta N. Rosenwald.

The South Park Commissioners turned over to the Museum \$125,802.68, representing the institution's share, as authorized by the state legislature, of collections made during 1933 under the tax levies for 1931 and previous years.

Of the gifts of material for the collections of the various departments which were presented by friends of the Museum during the year, some have already been mentioned on preceding pages in connection with their installation as exhibits or their acquisition by expeditions.

A notable gift is a collection of fifty-five precious stones representing the principal varieties mined in Ceylon, which was presented by Prince M. U. M. Salie, of Galle, Ceylon. These stones have been distributed among the collection of gems and jewels in H. N. Higinbotham Hall (Hall 31). Mrs. Richard T. Crane, Jr., presented, in memory of the late Richard T. Crane, Jr., Benefactor and for many years a Trustee of the Museum, an ancient Peruvian gold beaker of exceptional excellence. Mr. Homer E. Sargent, of Pasadena, California, gave the Museum a fine old Mexican serape and thirteen rare textiles from Algeria.

Through the generosity of Mr. C. Suydam Cutting, of New York, the Museum received an extremely interesting collection of birds and mammals from Upper Burma, where they were collected by Lord Cranbrook and Captain F. Kingdon Ward. A fine male specimen of the rare spectacled bear of northern South America was presented by Messrs. W. A. Olen and F. D. Hurley, of Clintonville, Wisconsin. For the mineral collections a purple fluorite crystal of unusually large size was presented by the Crystal Fluorspar Company, of Elizabethtown, Illinois. A specimen of the rare kind of

porphyry called rhombenporphyry, which is found in Oslo, Norway, and seldom, if ever, elsewhere, was presented by Mr. Johan Eriksen, of Oslo. Mr. Frederick Blaschke, of Cold Spring-on-Hudson, New York, gave the Museum an interesting example of placer gold, found in the crop of a duck. Eighteen reels of motion pictures of Tibetan dancers were presented by Dr. Wilhelm Filchner, of Berlin, Germany. Mrs. William H. Moore, of New York, gave the Museum fifteen metal mirrors and other archaeological material from China.

The American Museum of Natural History, New York, made a gift of seven reels of the Martin Johnson feature motion picture film, *Simba*. Mr. Arthur S. Vernay, of New York and London, gave two complete reels of the film, *India*, and some other motion picture films. Two mounted specimens of capercaillie were received from Mr. James Simpson. Mr. and Mrs. John P. Kellogg, of Chicago, presented 117 African birdskins. From Mr. Philip M. Chancellor, of Santa Barbara, California, was received a gift of forty-nine ethnological specimens representing the Yaqui Indians of Mexico. An extremely rare set of ten books came to the Museum as a gift from Mrs. Robert E. Ross, Mrs. Joseph H. King, and Mrs. William E. Pratt, of Chicago. It is the catalogue of the famous collection of Oriental porcelains of William T. Walters in Baltimore, Maryland.

As in past years, many other gifts were received from a multitude of sources, of which details will be found in the departmental sections of this Report under the heading Accessions, and also in the tabulated List of Accessions which begins on page 94. A number of gifts were received during the summer from visitors to A Century of Progress exposition who also visited the Museum and took the opportunity to bring specimens of various kinds of objects to the Museum for identification.

The name, Mary D. Sturges Hall, which formerly applied to Hall 3, has been transferred to Hall 5, because of the occupation of Hall 3 by the new exhibits pertaining to the races of mankind, and the renaming of Hall 3 as Chauncey Keep Memorial Hall in recognition of the late Mr. Keep's contribution toward these exhibits.

His Highness the Maharaja Gaekwar Sir Savaji Rao III, ruling monarch of Baroda, was a visitor at Field Museum on August 29. Among other distinguished visitors entertained at the Museum during the year were Mrs. Theodore Roosevelt, Sr., widow of the late President Theodore Roosevelt; Sir Arthur Smith Woodward, former curator of paleontology at the British Museum; Dr. Victor Van Straelen, Director of the Musée Royale d'Histoire Naturelle

de Belgique, Brussels; Dr. A. W. Grabau, professor of paleontology at the National University of China and chief paleontologist of the Chinese Geological Survey, Peiping; Professor Richard Willstätter, of Munich, winner of the 1918 Nobel prize in chemistry; Sir John Flett, K.B.E., of the Geological Survey of Great Britain; and Mr. W. Campbell Smith of the mineral division of the British Museum.

During the convention of the American Association for the Advancement of Science, held in Chicago in June, meetings of various sections were held in the James Simpson Theatre and the small lecture hall of Field Museum. On the evening of June 23 a special "open house" was held for members of the association, and a large number of the delegates attended. The use of the Museum lecture hall was extended also to the American Association of Museums for one of its meetings.

Because of Field Museum's important meteorite collection, largest in the world in number of falls represented, meetings at which the Society for Research on Meteorites was organized were held in the lecture hall on August 21 and 22. The late Dr. Oliver C. Farrington, then Curator of Geology, was elected honorary president of this society, and Associate Curator Henry W. Nichols (now Acting Curator of Geology) was elected a member of the council of the organization.

Because of the heavy traffic caused by A Century of Progress exposition, special regulations were put into effect by the South Park Commissioners during the period of the fair whereby parking of automobiles was not permitted in the vicinity of Field Museum or other institutions in Grant Park.

Through the courtesy of WGN, the *Chicago Tribune* radio station, a series of broadcasts on Field Museum and its activities was begun in December, and will be continued into 1934. The speakers include the Director and departmental heads of the Museum.

A number of objects for which the Museum no longer had use because of the possession of other similar material sufficient for its collections, or because of lack of suitable exhibition space, were sold. Among these were the large Chinese gateway obtained at the close of the Panama Pacific International Exposition of San Francisco in 1915; twelve totem poles, potlatch figures, and house-posts of the Northwest Coast Indians; material for twelve Hopi altars; a mastodon skeleton; and miscellaneous duplicate material of various kinds. Some 250 reproductions of Greek and Roman bronze objects have been removed from the collections in Edward E.

and Emma B. Ayer Hall, and are now available to any institutions or private collectors who might be interested in purchasing them.

Prior to their disposal by sale, the Chinese gateway and the totem poles were loaned to A Century of Progress exposition and exhibited at appropriate locations on the fair grounds.

Thirty-one of the more important habitat groups of animals in the Museum were made the subject of illustrations of a most unusual kind in a book, *The Animal Kingdom*, published by the Orthovis Company of Chicago. The pictures are printed by a special process which makes them appear, when viewed through the "orthoscope" (an optical device accompanying each copy of the book), to be in three dimensions, like the groups they depict.

Following the death of Dr. Oliver C. Farrington, Curator of the Department of Geology, Associate Curator Henry W. Nichols was appointed Acting Curator of the Department. Mr. Nichols had been associated with the Museum and with Dr. Farrington since 1894, and his experience on expeditions, in research, and in museum methods, assure that the work of the Department will be continued uninterruptedly along the same lines upon which it has been successfully conducted in the past.

With a reassignment of duties, the title of Mr. Sharat K. Roy, until recently Assistant Curator of Invertebrate Paleontology, was changed to Assistant Curator of Geology.

At the end of the year Mr. Llewelyn Williams, Assistant in Wood Technology in the Department of Botany, was made Assistant Curator of Economic Botany, to be effective from January 1, 1934.

Professor A. C. Noé, paleobotanist of the University of Chicago, was appointed Research Associate in Paleobotany on the staff of the Museum.

Mr. Karl P. Schmidt, Assistant Curator of Reptiles, who had been granted six months' leave of absence for research at European museums under a fellowship grant from the John Simon Guggenheim Memorial Foundation of New York, completed this work, and returned to his duties at the Museum.

Miss Bertha M. Schweitzer was employed as a clerk and plant mounter in the Department of Botany.

Under the provisions of the Field Museum Employees' Pension Fund, insurance amounting to \$6,000 was paid to Mrs. Oliver C. Farrington, widow of the late Dr. Farrington, Curator of Geology, whose death has been noted elsewhere in this Report.

Through the assignment, late in the year, of a number of workers to the Museum by the Illinois Emergency Relief Commission, a considerable amount of routine clerical and similar work, which otherwise would have had to be postponed indefinitely, was accomplished without additional payroll expense to the Museum. Some of these workers are employed under the provisions of the Civil Works Service of the federal government, which pays them, and others are employed under the Illinois "work relief" plan and paid by the state. This arrangement, which is of benefit both to persons who would otherwise be unemployed, and to the Museum, will be continued in 1934.

The scope of the Art Research Classes conducted at the Museum in cooperation with the Art Institute of Chicago was greatly expanded, and the number of students exceeded that of any previous year. In addition to the original class in drawing, painting, and illustration, which was continued with some thirty-five students enrolled, classes were organized for three new groups.

One of the new classes is a separate training group for art teachers in which there were another thirty-five students. Study at Field Museum has now been designated as a required course for all students in teachers' training classes of the School of the Art Institute. Another of the new classes established in 1933 is one for a summer course, designed to meet the needs of teachers and others who wish to pursue further art research studies and are unable, because of their employment, to attend the autumn, winter, and spring classes. About eighteen students participated in this course. The third new class is one conducted on Saturdays through the greater part of the year, which offers supplementary work for the benefit of professional artists, teachers, and others who are engaged on other days but can devote a half or a full day to study on Saturdays. In this group there were about fifteen persons enrolled.

Much work of high quality was produced by students in all the classes. The same instructor who has conducted these classes for a number of years, Mr. John Gilbert Wilkins, of the faculty of the Art Institute school, was again in charge. The students use exhibits in the Museum as subjects for the paintings, designs, sculptures, and other work they produce. A classroom with working facilities is provided by the Museum for their use.

The students in the above-mentioned classes are all engaged in comparatively advanced work. In addition to these, the classes of children inaugurated in 1932 by the Saturday School of the Art

Institute were continued in 1933. More than one hundred children were enrolled in these. They ranged from pupils in the fourth grade of elementary schools to high school students.

From June 1 to September 30, a period corresponding to the most important months of A Century of Progress exposition, the Museum was kept open daily from 9 A.M. to 7 P.M., or an hour later than is usual in the summer schedule.

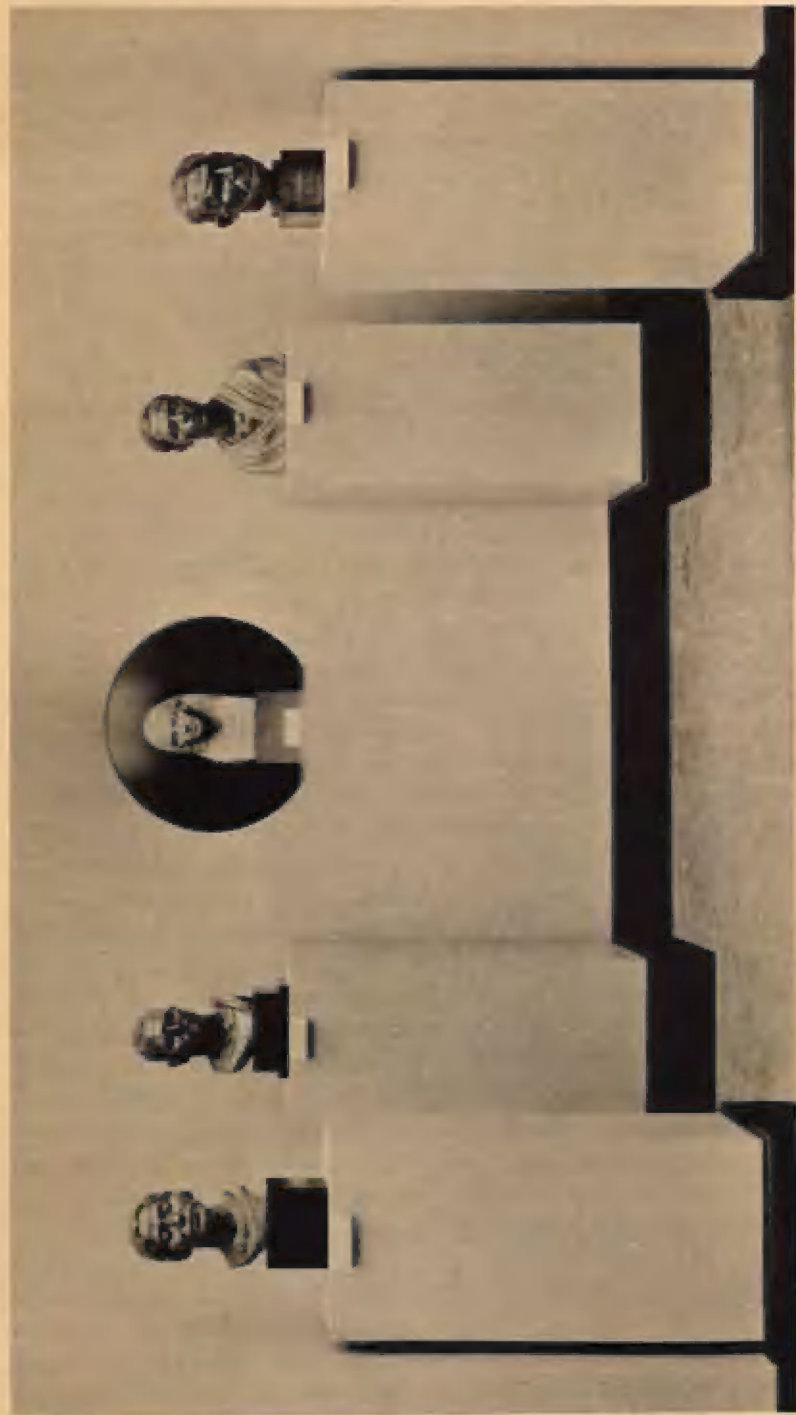
Measures to save expense on electric lighting were continued, and in the autumn the Museum signed an "off peak" form of contract with the Commonwealth Edison Company from which economy benefits might be derived. This called for a reduction of the amount of current used between the hours of 4:30 P.M. and 7:30 P.M. during the months of November, December, January, and February. To facilitate this, and for other reasons, changes were made in the schedule of visiting hours to be observed at the Museum in future. Henceforth the hours during the various seasons will be as follows: November 1 to March 31, 9 A.M. to 4:30 P.M.; April 1 to 30 and September 1 to October 31, 9 A.M. to 5 P.M.; May 1 to August 31, 9 A.M. to 6 P.M. During the period when the 4:30 closing hour is in effect, the Museum will be kept open until 5 o'clock on Sundays and holidays; in September, up to and including Labor Day, the closing hour will be 6 P.M.

The use of electricity was further cut down during the daytime hours by changing the lighting in the shop of the Division of Printing; by installing pendant switches in the general Library and the libraries of the Departments of Botany and Geology; and by using only the two center chandeliers in Stanley Field Hall on dark days when the hall required lighting.

The superintendent of maintenance, the chief engineer, and the working forces under their supervision, gave the usual careful attention to proper maintenance of the building, and many improvements were effected. Some of the more important are detailed below.

Foreseeing unusual crowds during the summer months, revisions were made in the arrangement of the ticket and checking counters at the north and south entrances to facilitate service to the public. New checking facilities were provided for 600 umbrellas, 300 coats, and many packages.

The opening this year of the two large new halls in the Department of Anthropology—Chauncey Keep Memorial Hall (Hall 3) and the Hall of the Stone Age of the Old World (Hall C)—imposed especially heavy work upon the maintenance division. To prepare Hall 3



RACIAL TYPES OF INDIA

An alcove in Chauncey Keep Memorial Hall showing method of installation

to become Keep Hall it was first necessary to remove from it all the cases devoted to North American archaeology which formerly occupied it. These were transferred from the first floor to their new location in Hall B on the ground floor. Prior to this operation Hall B was prepared to receive these exhibits. Twelve insulating panels with ventilators in the windows were installed; the doors and tile wall at the east end of the hall were removed; the ceiling lights were rearranged in two straight lines; and the walls and ceiling were patched and painted.

Chauncey Keep Memorial Hall (Hall 3) was entirely remodeled. The central part of the hall was reconstructed to form an octagon around the "Unity of Mankind" bronze group, and the sections of the hall on either side of this octagon were reconstructed into a series of alcoves (see Plate III). Seventy-seven pedestals were built for the exhibition of the bronze and stone figures created by Miss Malvina Hoffman; also three shadow box niches in the walls. At the east end of the hall eight individually lighted wall cases were built and prepared for the installation of physical anthropology exhibits. Four temporary display boxes were provided for illuminated colored transparent pictures. The walls and ceiling of Keep Hall were decorated; a rubber tile floor and baseboard were installed; four new double benches were provided; and the hall was equipped with indirect illumination. A partition was built between Keep Hall and James Nelson and Anna Louise Raymond Hall (Hall 4).

In the Hall of the Stone Age of the Old World (Hall C) the fronts of eight group cases were built out to provide space for tipping the view glasses forward so as to eliminate reflections. Six new wall cases were built in this hall, and the ground framework was constructed for four groups. All sixteen cases on the south side of this hall were glazed and finished, and the walls and ceiling were patched and painted.

The maintenance force gave assistance to the scientific Departments in various other new installations, reinstallations, or rearrangements of exhibits. Among such operations were the following: remodeling of the case containing the group showing Indians making stone implements, in Hall B; remodeling of the case containing the model of a Walpi pueblo in Hall 7 (Stanley McCormick Collection, archaeology and ethnology of southwestern United States); building the ground framework for the gaur ox and orang groups in William V. Kelley Hall (Hall 17), and glazing and finishing the cases

containing them; remodeling a built-in case at the west end of the same hall for a proposed proboscis monkey group; reconstruction of a 12' x 12' case for the new lion group in Carl E. Akeley Memorial Hall (Hall 22); rebuilding a 15' x 15' case in the same hall to accommodate a proposed group of bongo; construction of a wall case for the exhibit of rhinoceros horn cups in George T. and Frances Gaylord Smith Hall (Hall 24); and construction, glazing, and finishing of the case containing the new exhibit of a fossil sloth in matrix, in Ernest R. Graham Hall (Hall 38).

All lighting fixtures, and the tops of built-in exhibition cases containing concealed lighting arrangements, were cleaned in the early part of the year. In Hall B, to which the North American archaeological exhibits have been transferred, twenty-five lighting fixtures were hung, and one large case was equipped for illumination. In the Hall of the Stone Age of the Old World (Hall C) electrical work was completed on the cases containing the groups, and fifteen floor cases were wired for lighting. In Chauncey Keep Memorial Hall (Hall 3) twenty-six new circuits were run in, 226 lamps installed, and eight wall cases wired. In George T. and Frances Gaylord Smith Hall (Hall 24) eleven wall cases were wired.

In the general Library 1,350 square feet of steel shelving were installed. In the Herbarium seven additional all-steel eight-door storage cases were assembled. In the Department of Zoology laboratories twenty-seven all-steel bird and mammal storage cases, with 240 large trays and 600 small ones, were provided.

On the exterior of the building, sixty-three window sills and eight window transoms were replaced, and twenty-three sills were repaired.

Five large signs containing information about the Museum for visitors to A Century of Progress were set up at advantageous locations on the lawns around the Museum.

In the public lavatories valves were overhauled generally. The Crane Company, of Chicago, changed all old valves in the men's lavatory, which had been giving trouble, to a new type which has proved very satisfactory. This was done without cost to the Museum.

Because of the building of street car tracks over the Illinois Central Railroad the Museum water main had to be changed and about 500 feet of new pipe laid. This involved no expense to the Museum.

During the summer the boilers and the heating system in general were carefully gone over, and the brick work and stokers were repaired.

Under its contract with the John G. Shedd Aquarium, the Museum continued to furnish steam from its plant to the aquarium during the months when heat was required.

DEPARTMENT OF ANTHROPOLOGY

EXPEDITIONS AND RESEARCH

During the summer of 1933, Field Museum resumed its archaeological investigations on the Lowry ruin in southwestern Colorado by sending out a third expedition under the leadership of Assistant Curator Paul S. Martin. Dr. Martin had previously spent two seasons there in 1930 and 1931. He left Chicago by motor car on June 16, and returned to the city October 2. The length of time spent in the field amounted to thirteen weeks. This expedition, known as the Field Museum Archaeological Expedition to the Southwest, was financed from the income of a fund established by the late Julius and Augusta N. Rosenwald.

The ruin explored by Dr. Martin, under permit from Secretary of the Interior Harold L. Ickes, is located about thirty-two miles northwest of Cortez in Montezuma County, and contains a prehistoric Indian pueblo. From four to seven men were employed according to need during the season. Ten large dwelling rooms of the pueblo and one kiva (underground chamber in which ceremonies were held) were completely laid bare. In the course of these excavations 1,015 cubic yards of earth and rock were moved. The total number of ground floor rooms now open is twenty-eight. Two more kivas were found, bringing the total number for the three seasons' work up to nine. Also, considerable trenching was undertaken.

Several important discoveries were made. It has now been made certain that the area at present occupied by the two superposed kivas was at one time composed of secular or dwelling rooms. Only the dismembered fragments of the walls which had at one time constituted the partitions of these rooms were found, but they were sufficient to give the sequence of development and change. It was found also that the builders of Lowry Pueblo often tore away portions of old walls and tied new ones into them. Thus, the striking differences in masonry in two walls apparently built at the same time may be properly explained.

It was likewise discovered that a former dwelling room was partly demolished and then enlarged so as to enclose a later kiva. The nature of this enlargement and the remnants of the demolished wall

were cleverly concealed by the free use of adobe mortar and spalls. It was not until this season that certain architectural anomalies of this kiva enclosure were understood.

A very accurate set of ground plans and cross sections was prepared, traced, and blue-printed. The excavating was conducted in such a way that a careful record of all potsherds was obtained, the specimens yielded by each foot of ground being separately sacked and catalogued. From these potsherds it will be possible to work out the stratigraphy, if any should exist, and to correlate the ceramic types with the masonry and the dated portions of the pueblo. Thirty-five portions of roof beams and lintels were recovered, treated with paraffin, and shipped to the Laboratory of Anthropology at Santa Fé, New Mexico, for study and dating. One hundred and eight photographs were made by the expedition. These were taken especially to show unusual and significant phases of the work, details of masonry, abutments, ties, position of roof beams, and perishable materials. A scale model, showing two phases in the development of the pueblo, was constructed of wood and brought to the Museum.

The results of this season's efforts are more satisfactory than those of the preceding ones. Further excavations have confirmed some of the conclusions reached after the season of 1931. Lowry Pueblo was first of all Chacoan in culture and was successively changed, modified, and added to by its builders, their descendants, and finally by newcomers. Room construction, types of masonry, and ceramic changes all bear out this conclusion. However, certain hypotheses which previously seemed reasonable had to be discarded in the light of new evidence obtained this season. Moreover, there remain many puzzling features still to be explained, and this can be accomplished only by further digging.

Assistant Curator Wilfrid D. Hambly completed a manuscript on the ethnology of Australia to be published in the leaflet series. Assistant Curator J. Eric Thompson wrote a handbook on the archaeology of South America with reference to the exhibits in Hall 9, which it is hoped will be brought out next year. Two interesting leaflets, one entitled *The Races of Mankind, an Introduction to Chauncey Keep Memorial Hall*, the other, *Prehistoric Man, Hall of the Stone Age of the Old World*, were written by Assistant Curator Henry Field, and published as Anthropology Leaflets Nos. 30 and 31. *The Archaeology of North America*, a guide to the exhibits in Hall B, written by Assistant Curator Martin, was issued as Anthropology Guide, Part 2. This is a most useful and instructive handbook



SUN-WORSHIP AT CARNAC ALIGNMENT, NEOLITHIC PERIOD, BRITTANY, FRANCE
Group VII in Hall C

presenting for students and the general public an excellent survey of the early history of the Indians in North America, with a lucid exposition of the archaeological material.

Curator Berthold Laufer devoted most of his time during the year to the reinstallation of the Chinese and classical collections. He also made some researches into the history of buckwheat, maize, rye, wheat, and other cereals.

Sixteen signed articles were contributed by the staff of the Department to *Field Museum News* during the year; also twenty-five unsigned articles and brief items. Data for twenty-four newspaper publicity stories were likewise supplied by the staff.

ACCESSIONS—ANTHROPOLOGY

The number of accessions recorded during the year is forty-seven. Of these thirty-nine are gifts, two result from expeditions, and six were obtained by exchange. The total number of objects received in these accessions is 2,327.

An important gift consisting of seven Navaho blankets was received from the estate of the late Edward E. Ayer, Benefactor and former Trustee of the Museum. These blankets were obtained by Mr. Ayer some thirty years ago, and are distinguished because of their mellow colors and exceptional weaves.

An exchange made with Mr. Warren K. Moorehead, of Andover, Massachusetts, resulted in the acquisition of twelve stone artifacts which belong to the Red Paint Culture of Maine. Likewise by exchange with Mr. Frank F. McArthur, of Oakland, Iowa, there were acquired ten fine examples of early Pueblo pottery recovered from burial mounds in southwestern Colorado and southeastern Utah.

More than fifteen hundred objects were obtained through the Field Museum Archaeological Expedition to the Southwest. This collection consists of a large variety of bone and stone tools, pottery, potsherds, beads, articles of wood, pendants, animal bones, and two pairs of elk antlers, the points of which have been beveled. They may have formed part of a ceremonial headdress.

The collection of Mexican serape blankets has been enriched by two remarkable gifts. The first of these is a very finely woven serape presented by Mr. Homer E. Sargent, of Pasadena, California (formerly of Chicago), an old friend and generous patron of this institution, as an addition to the Sargent-Ryerson collection of Mexican serapes on exhibition in Hall 8. Another serape, received from the estate of the late Edward E. Ayer, is made of two strips

woven together lengthwise. Judging by the ornamentation, both serapes were probably made in the neighborhood of Saltillo, in northern Mexico.

Thirteen beautiful textiles of fine quality, from the Kabyles of Algeria, are another gift from Mr. Sargent, who had collected them personally many years ago during a journey in northern Africa. The collection comprises well-woven and decorated rugs such as are used in the mosques and in better-class families, draperies for decorating the walls of mosques, and examples of the capes worn by Kabyle women. All these textiles were made by hand on primitive looms worked by women in their own homes. They could not be obtained at present, and are a most valuable addition to the Museum's African collections.

By exchange with the Department of Middle American Research, Tulane University, New Orleans, Louisiana, the Museum acquired a collection of fifty-two pottery figurines and vessels belonging to the Huastec culture of eastern Mexico, which was hitherto poorly represented in the Museum collections.

Mrs. Wills B. Lane, of Savannah, Georgia, presented a four-piece costume worn during festivals by Indian men of rank in Santo Tomas, Chichicastenango, Guatemala. This costume was placed on exhibition immediately. Examples of men's ceremonial clothes are difficult to obtain in that part of Guatemala, and the Museum previously had possessed no complete costume representing the types used there.

In memory of the late Richard T. Crane, Jr., Benefactor and for many years a Trustee of Field Museum, Mrs. Crane, his widow, presented a gold beaker from the highlands of Peru. This valuable vessel, about six hundred years old, is described in *Field Museum News*, Volume 4, No. 9, September, 1933, and has been placed on exhibition in H. N. Higinbotham Hall (Hall 31).

Miss Lucy D. Plummer, of Chicago, gave the Museum thirteen pottery vessels which she had collected. They are beautiful examples of the decorative skill of the Conibo Indians, who live on the banks of the Ucayali River, a tributary of the Amazon, in eastern Peru.

From another tributary of the Amazon, the Jary River, comes an ethnological collection of twenty-four pieces presented by Professor Franz F. Exner, of Northfield, Minnesota. The collection consists of bows, arrows, a paddle, and eight pottery vessels manufactured by the Aparai Indians. The decorations on the arrows are of very high quality.

Eight motion picture reels representing religious dances and pantomimes of Tibetan Lamas were presented by Dr. Wilhelm Filchner of Berlin, well-known explorer of Tibet, who made these films on his last expedition. They are not only of educational and artistic value, but are also helpful in the study of these curious dances, in connection with which the Museum has a comprehensive collection of masks and costumed figures on exhibition in the West Gallery (Hall 32).

An important addition to the Chinese collection is a gift from Mrs. William K. Moore, of New York (formerly of Chicago), of sixteen metal mirrors, several bronze ornaments for chariots and harness, and a cast-iron frog. The mirrors come from the Huai River Valley in Anhui Province, China, and date in the third century B.C. They are elaborately decorated with geometric designs in relief and represent the earliest Chinese mirrors now extant.

A legacy of \$50,000 left to the Museum by the late Chauncey Keep, a member of the Board of Trustees from 1915 until his death in 1929, was applied to the expense of the construction work in Hall 3 (named in his honor Chauncey Keep Memorial Hall), and to the cost of a number of the bronze figures, busts, and heads sculptured by Miss Malvina Hoffman and placed on exhibition in the hall. The balance of the cost of this notable exhibit illustrating the races of mankind has been met by generous contributions, totaling more than \$150,000, from Mr. Marshall Field, Mrs. Stanley Field, and Mrs. Charles H. Schweppe.

Mr. Marshall Field is the donor of sculptures of a Bushman family, an aged Bushman, a Batwa boy, a Mangbetu woman, a Negro from Dahomey, an Ituri Pygmy group, a fisherman from Sicily, a Vedda, a Rajput woman, a Singhalese, an Indian Brahman, an Afghan, an Andaman Islander, an Eskimo man and woman, four Chinese, a Tibetan, a Manchu, a Japanese, a Malay, a Dyak, and an Australian aborigine.

Mrs. Stanley Field presented the sculptures of a Bushman woman, an African dancing girl of the Sara tribe, a woman from the Sudan, a Senegal Negro, an Abyssinian Hamite, a Breton woman, a Basque, an Arab, a Bengali woman, a Burmese, a Mongol, a Tibetan woman, a Japanese lady, a Blackfoot Indian, a Hawaiian, a Samoan, a Jakun woman, a Javanese boy and woman, and a group of Malayan cock-fighters consisting of two men, a woman, and a boy.

The sculptures of a Shilluk warrior, two Negroes, a Somali, an Ubangi woman, a Nubian, a Frenchman, an Anglo-Saxon, a Chinese,

two Kashmiris, a Bengali, a Tamil, a Chinese jinriksha man, two Ainus, a Hawaiian surf-rider, an Australian aborigine mother and child, a Balinese woman, a Maya, a Patagonian, a Georgian, a Lapp, and an Italian were presented by the late Chauncey Keep.

Mrs. Charles H. Schweppe contributed to Chauncey Keep Memorial Hall the group of three bronze figures of heroic size symbolizing the unity of mankind, which occupies the center of the hall, the stone head of an Indian woman from Jaipur, the limestone bust of a Chinese woman, and the black marble head of an Abyssinian woman.

Miss Hoffman, the sculptor, presented the head of a Shanghai Chinese sculptured in limestone. At the end of the year she was engaged in modeling the remaining pieces which are to be placed in the hall.

A collection of silver ornaments and other jewelry worn by the Druze women in the Lebanon, Syria, was obtained and presented by Miss Nejla Izzeddin, of the Oriental Institute of the University of Chicago, who last year made an anthropometric survey of the Druzes of Syria.

A collection of Arab household equipment used by the modern Arabs of the Kish area is a gift from Mr. Henry Field, of Chicago. The collection contains also interesting camel bags of the Beduins, and a coffee bag, measure, pestle and mortar of the Druzes. Likewise presented by Mr. Field were twenty-five pottery sherds with painted designs, and a glass vessel which he excavated at Niliat, about ten miles east of Kish.

Mr. Field also presented a collection of twenty-one chert projectile points, resembling somewhat those found with fossil bison at Folsom, New Mexico.

From the Musée d'Ethnographie, Paris, the Museum received in exchange four objects collected by the Dakar-Djibouti Expedition in 1931. Since the Museum has no other material from French West Africa, these objects are especially useful. Two of them, a musical instrument and a painted stone, were used in sacred ceremonies of initiation. Mr. H. G. Moore, of Peoria, Illinois, presented five musical instruments—a drum of fine workmanship from Zanzibar, three stringed instruments of Arab origin which are used in North Africa and western Asia, and a primitive one-stringed instrument consisting of a wooden resonator, used by Hottentots and some southern Bantu tribes.

Through a gift from Mrs. Laura C. Boulton, of Chicago, there have been added several valuable objects to the collections from Angola, Portuguese West Africa. Included is a marimba, an excellent example of this kind of musical instrument, made by fastening thin slats of wood to a frame. Under each piece of wood is a gourd that gives resonance when the wooden slats are beaten with rubber-headed sticks. Like this marimba, a tubular drum presented by Mrs. Boulton is valuable because of the increasing rarity of such instruments. Owing to the advance of European influences difficulty is experienced in finding artisans who are able to make these instruments, and musicians who can play them. A finely carved mask of the Vachokue tribe of eastern Angola is of scientific interest because of its association with initiation ceremonies. The collection also includes carved wooden staffs and basketry.

By exchange with the National Museum of Copenhagen, Denmark, there were received a number of reproductions of well-selected implements belonging to the Danish Maglemosean and kitchen-midden cultures, together with a number of original specimens representing various types of implements of these periods.

CATALOGUING, INVENTORYING, AND LABELING—ANTHROPOLOGY

Thirty-four of the forty-seven accessions received during the year have been entered in the inventory books. Six accessions of previous years and parts of seven others have also been entered.

The work of cataloguing has been continued as usual, the number of catalogue cards prepared during the year totaling 1,492. The total number of catalogue cards entered from the opening of the first inventory volume is 207,375.

The catalogue cards prepared are distributed as follows: archaeology and ethnology of North America, 130; archaeology and ethnology of Mexico, Central and South America, 275; archaeology and ethnology of China and Japan, 131; archaeology of the Gobi Desert, Mongolia, 178; ethnology of Melanesia, 2; ethnology of Africa, 22; archaeology of the Near East, 27; archaeology of continental Europe, 702; archaeology of England and Scotland, 24; physical anthropology, 1. All these cards have been entered in the inventory volumes, which number fifty-seven.

A total of 10,051 labels for use in exhibition cases was supplied by the Division of Printing. These labels are distributed among the collections as follows: classical archaeology, 1,911; Chauncey Keep Memorial Hall, 540; Hall of the Stone Age of the Old World, 1,678;

Melanesia, 2,337; China, 1,880; Australia, 452; Africa, 42; Southwest, 840; Central and South America, 357; and 14 hall labels. The Division of Printing also supplied 2,650 catalogue cards and 100 accession number stickers for use in the files.

The number of photographs mounted in albums is 700. Five new albums were opened. To the label file 990 cards were added.

INSTALLATIONS AND REARRANGEMENTS—ANTHROPOLOGY

The Department has an exceptional record this year in that two new halls were opened and three halls were completely reorganized in such a way that they present an entirely new appearance.

One hundred and five exhibition cases were installed during the year, distributed as follows:

Edward E. and Emma B. Ayer Hall (Hall 2).....	26
Southwest Archaeology and Ethnology (Hall 7).....	8
Archaeology and Ethnology of Mexico and Central America (Hall 8).....	1
George T. and Frances Gaylord Smith Hall (Hall 24).....	9
Ethnology of China and Tibet (Hall 32).....	2
Joseph N. Field Hall (Hall A).....	28
Ethnology of Australia (Alcove A1).....	5
Stone Age of the Old World (Hall C).....	25
Ethnology of Africa (Hall D).....	1
Total	105

The collections pertaining to classical archaeology, chiefly from Italy, displayed in Edward E. and Emma B. Ayer Hall (Hall 2), have been completely revised, relabeled, and reinstalled in twenty-six cases by the Curator. The material has been carefully studied and sifted, unessential objects have been eliminated, and many pieces not previously shown have been placed on exhibition. Above all, a much clearer and more intelligent arrangement has been effected. With the exception of surgical and musical instruments and some steelyards and weights, which have been installed in one case, all metal reproductions of Greek and Roman bronzes and furniture have been removed from exhibition. The collection is particularly strong in Etruscan and Pompeian archaeological material. The Etruscan exhibits are displayed in fourteen cases north of the stairway that leads to the ground floor and divides the hall into two equal sections. There is a comprehensive display of plain, black, and painted Etruscan ceramics, and of marble, alabaster, and tufa cinerary urns and sarcophagi. Three of the sarcophagi, decorated with marine monsters and sphinxes in bright colors, are unique. South of the stairway are exhibited household utensils of bronze, iron, pottery, and glass found in Pompeii, Boscoreale, and other places in Italy. The frescoes formerly shown in

the hall are now displayed in the adjoining corridor, where they can be seen to greater advantage. At the south end of the hall there are four cases containing good specimens of Oriental and Roman glass to which some fine examples of colored glass found in the Sassanian palaces at Kish have been added. Each case is fully labeled and provided with an instructive map.

Chauncey Keep Memorial Hall (Hall 3) was opened to the public on June 6. It contains sculptures in bronze and stone illustrating the principal types found among the races of mankind, the work of Miss Malvina Hoffman. On account of the unique character of its contents, the hall required special treatment and a great amount of thoughtful planning. New resources of museum technique were applied to it, and a great deal of construction work had to be undertaken. Alcoves were built to provide a suitable setting for the sculptures. Numerous experiments were made with reference to the color of backgrounds and systems of lighting, until at last a satisfactory and harmonious exhibition was achieved. The exhibits, consisting of full-length figures, busts, and heads, are arranged in geographical order, sections being devoted to each of the principal racial divisions—those of Africa, Europe, Asia, America, Oceania, and Australia. Included are several attractive groups, such as a Bushman family, Ituri Forest Pygmies, Malayan cockfighters, and an Australian aborigine mother and child. Thirty-one colored transparencies representing various racial types, made under the direction of Miss Hoffman, are shown at the east end of the hall. Installation of the hall is not yet completed. A number of bronze heads and a full-length figure of a Pueblo Indian woman remain to be made, and special exhibits in physical anthropology will be installed during the coming year. Two views of Chauncey Keep Memorial Hall are shown in Plates III and IV of this Report.

The reorganization of Hall 7 was continued during the year under the direction of Assistant Curator Martin. Eight cases of South-western United States archaeological and ethnological material were placed on exhibition. Most of the objects, including buffalo-hide shields, painted buffalo robes, and pottery from pueblos in New Mexico, as well as ancient pottery, textiles, baskets, and bone, stone, and wooden artifacts, were never before exhibited. Noteworthy are the rare and well-preserved objects recovered from Cliff Dweller pueblos and dry caves containing Basket Maker burials. The old-style black labels have been replaced throughout this hall with short, non-technical statements on buff cards in black type.

The Hopi house was thoroughly cleaned, and the life-size figures in it were repainted by Mr. Leon L. Pray, of the Department of Zoology. The Hopi altars were regrouped, and the models of the pueblo villages repaired and cleaned. Hall 7 now presents an orderly and attractive appearance.

In Hall 8, a case of Guatemalan textiles was reinstalled so as to enable the exhibition of the man's costume from Santo Tomas, Chichicastenango, presented this year by Mrs. Wills B. Lane, as well as textiles collected in 1931 by the Third Marshall Field Archaeological Expedition to British Honduras.

In George T. and Frances Gaylord Smith Hall (Hall 24) nine additional cases were installed this year. These comprise four cases of ancient Buddhist and Taoist marble sculpture, a case of Buddhist and another of Taoist bronze votive effigies, a case of T'ang dynasty tombstones, an exhibit illustrating the neolithic period of China, and a case of rhinoceros-horn cups. Forty-six framed paintings and tapestries and one cut velvet hanging were distributed over the walls of this hall and the South Gallery. The installation of this hall is now complete.

Reinstallation of Hall 32, devoted to the ethnology of China and Tibet, has been begun. Plans have been worked out, and a case of Chinese fans has been attractively installed. A case of Tibetan costumes, placed on dummies, has been reinstalled.

Rearrangements were made in several cases of the gem room (H. N. Higinbotham Hall, Hall 31), and a gold beaker from Peru, presented this year by Mrs. Richard T. Crane, Jr., has been added to the case of ancient American gold ornaments.

During the year exhibits in twenty-eight cases were installed or reinstalled on light-colored backgrounds in Joseph N. Field Hall (Hall A) under the direction of Assistant Curator Albert B. Lewis. These cases contain ethnological material from New Guinea, the Admiralty Islands, New Britain, the Solomon Islands, New Hebrides, New Caledonia, and some of the smaller Melanesian islands. Opportunity was taken to place on exhibition many objects not previously shown. One case, that representing the region around Astrolabe Bay, New Guinea, contains new material exclusively.

The principal change, aside from the lighter backgrounds, has been in the rearrangement and grouping of the material so as to illustrate native life and industries to greater advantage. Numer-

ous photographs have been added to show local types of dwellings, and the ordinary clothing and ornaments worn by men and women, as well as their special festival garb. Wherever possible, photographs illustrating native industries and methods of work were also added. These are shown together with specimens in various stages of manufacture. Examples are the making of shell beads for money in New Guinea and the Admiralty Islands; the making of large shell rings on the island of Tanga, where such rings are used for both money and ornament; the making of somewhat similar rings, but by an entirely different method, in northern New Guinea at Berlin Harbor; and the making of string and fish-nets in the same region.

Among numerous objects of interest are a series of shields and spears from New Guinea and New Britain; elaborately barbed and ornamented spears and arrows from the Solomon Islands; a great variety of clubs from the New Hebrides and New Caledonia; stone-headed clubs from eastern New Guinea; remarkable carved and painted tablets and figures from the Gulf of Papua; and huge figures from the New Hebrides carved out of wood and tree ferns.

During the year installation of five cases illustrating the ethnology of Australia was completed under the direction of Assistant Curator Wilfrid D. Hambly. Since the foundation of the Museum some forty years ago, ethnological material from the aborigines of Australia has been gradually acquired by purchase and exchange. A selection made from this material has been so arranged as to represent four characteristic culture areas, each of which has distinctive forms of boomerangs, shields, clubs, and spear-throwers. An exceptionally fine collection of spear-heads, made from quartz and glass, is displayed, along with the bones used in pressure flaking to produce the finely serrated edges. Among objects connected with native magical practices are shoes of emu feathers used in the tracking and ritual murder of an enemy; pointing bones for injuring a foe by magical rites; and a skullcap of gypsum such as is worn by widows at the graves of their husbands. A representative series of personal ornaments, and examples of domestic implements and utensils, are displayed on the screens. An instructive map showing tribal distribution, especially drawn for this exhibit, is hung on the wall. The Australian collection has been placed in an alcove designated A1, located between Joseph N. Field Hall (Hall A) and Hall E.

The installation of the Hall of the Stone Age of the Old World (Hall C), was completed this year, and the hall was opened to the public in July. Four new groups were installed in addition to the

four completed in 1932. Also, nine floor cases with screens, and eight special wall cases, were installed this year under the direction of Assistant Curator Henry Field. The hall now contains a total of eight large groups, fifteen screen cases, and eight special wall cases. The groups, which are life-size, are as follows: (1) Chellean scene, France; (2) Neanderthal family at Devil's Tower rock-shelter, Gibraltar; (3) cave of Gargas, France, illustrating the dawn of art in the Aurignacian period; (4) sculptured frieze of Le Roc, France, illustrating the art of the Solutrean period; (5) rock-shelter of Cap-Blanc, France, showing frieze of animals and Magdalenian sculptures in high relief; (6) a boar hunt of the Azilian period; (7) sun-worship by a priest of the neolithic period at Carnac in Brittany, France, illustrated in Plate V of this Report; (8) Lake Dwellers of Switzerland. These groups were planned, and data for them were secured, by Assistant Curator Field with the cooperation of Abbé Henri Breuil, of Paris. The sculptural work was executed by Mr. Frederick Blaschke, who has succeeded admirably in restoring the various types of prehistoric man as scientific research indicates they must have appeared in life. The caves in groups 3, 5, and 6 were also reproduced by Mr. Blaschke, and are based on studies of the originals. The painted backgrounds are the work of Staff Artist Charles A. Corwin. Messrs. Marshall Field, Frederick H. Rawson, and Silas H. Strawn, members of the Board of Trustees of the Museum, have contributed to the cost of the exhibits in this hall.

The eight special cases contain the following: the skeleton of a Magdalenian woman from Cap-Blanc, France, which is the only Magdalenian skeleton in the United States; a reproduction of the clay bison at Tuc d'Audoubert, France, the earliest examples in existence of modeling in the round, of the Magdalenian period; a tusk of *Elephas antiquus* from Steinheim an der Murr, Germany; four colored reproductions of Aurignacian cave paintings; a colored plaster copy of the Solutrean sculpture of a pair of fighting male ibexes, one of the most important sculptures of the upper paleolithic period; six colored reproductions of Magdalenian cave paintings from Font-de-Gaume, France; eight drawings of animals contemporary with prehistoric man in western Europe; three drawings by the late Amedée Forestier of reconstructed neolithic hunting scenes; and photographs and reconstructions of Lake Dweller sites in southern Germany excavated by Dr. R. R. Schmidt.

The archaeological collections, shown in fifteen screen cases, are arranged in chronological sequence, covering the periods between

the Pliocene flint implements of Ipswich, England, and the iron age of Neuchâtel, Switzerland. These exhibits, which comprise human and animal remains, and artifacts, are placed opposite each of the groups to which they correspond in time. Especially noteworthy are the type collections from Solutr  and Tart  in France; original Neanderthal fragments; the Aurignacian necklaces from Sergeac, in France; the Aurignacian objects from Czechoslovakia; Magdalenian carvings on bone and stone; and a series of Azilian painted pebbles.

Altogether the Hall of the Stone Age presents, so far as the present state of science permits, a vivid, colorful, and impressive picture of the character and life of prehistoric man in western Europe.

The picturesque textiles from Algeria presented by Mr. Homer E. Sargent have been installed in a screen case and placed on exhibition.

Much time and care was spent on the rearrangement of storage rooms on the third floor. On completion of the hall of Chinese archaeology surplus material from China was sorted, classified, and neatly arranged with appropriate labels on the steel racks in Room 66. Room 28 was cleared and is now reserved for the reproductions of Greek and Roman bronzes and for surplus material from Egypt and Melanesia. Much of the material in storage is available for exchange or other purposes.

The study collection in physical anthropology, housed in steel cabinets in Room 39, is now entirely arranged and comprises 450 complete skeletons, 350 of which are from North America and 100 from South America, mainly from Peru; 1,100 skulls, 350 of which are from North America, 300 from South America, 300 from the Pacific area, 50 from Kish, Mesopotamia, and 100 from various other localities; 2,000 fragmentary human remains including skulls and parts of skulls, long bones, and other bones; and ten articulated human skeletons including a male and female aboriginal Australian. There are also a series of casts of racial type heads (mainly Asiatic) and facial masks from Africa.

The friendly cooperation of Dr. Gerhard von Bonin, Assistant Professor of Anatomy at the University of Illinois, in restoring and classifying skulls and skeletal material, is gratefully acknowledged.

The prehistoric archaeology study collection in Room 40, which contains important material from Europe, Africa, Asia, Australia, and Central America, has been rearranged. This collection numbers approximately fifty thousand objects of stone and bone. Combined

with the material from prehistoric Europe on exhibition in the Hall of the Stone Age of the Old World, this study collection enables students to examine representative series from all important ancient sites so far discovered. Photographs of European sites made by the three Marshall Field Expeditions to Western Europe are also available.

Repairing and numbering of specimens and poisoning of exhibition cases and perishable material were taken care of in the usual manner.

The Chinese gateway formerly shown in Stanley Field Hall, a number of Indian totem poles, grave posts and house posts, and two articulated skeletons were loaned by the Museum to A Century of Progress exposition where they attracted many visitors. Because of lack of suitable exhibition space in the Museum the gateway and the totem poles and posts were sold after the close of the exposition.

DEPARTMENT OF BOTANY

EXPEDITIONS AND RESEARCH

No expeditions were conducted by the Department of Botany during the year. In Europe, however, Assistant Curator J. Francis Macbride continued his work, described in the Reports of 1929 to 1932, inclusive, of photographing, under a grant from the Rockefeller Foundation, type specimens of plants preserved in European herbaria. During 1933 about 3,000 additional negatives were made, most of which already have been received at the Museum. The collection of negatives has now reached a total of more than 26,000, representing almost as many species, chiefly South American plants.

During the early part of the year Mr. Macbride concluded his work at the University Botanical Museum of Copenhagen, where he photographed many of the Central American and Mexican types obtained by the famous collectors Oersted and Liebmann, as well as those brought from Brazil by early Danish explorers. The success of his work at Copenhagen was facilitated by the cordial cooperation of Dr. Carl Christensen, who is in charge of the herbarium.

After completing work at Copenhagen, Mr. Macbride returned to Berlin, where he made further photographs of the types preserved in the remarkably extensive herbarium of the Berlin Botanical Garden and Museum. As on previous visits to Berlin, Mr. Macbride received the most hearty assistance from the director, Dr. Ludwig Diels, and from the staff of the museum and herbarium, and he

was thus enabled practically to complete the photographing of South American types.

Toward the middle of the year Mr. Macbride proceeded to Switzerland, where he had already photographed the types in certain families. Resuming his work there, he was still engaged at Geneva at the end of the year. The Delessert and De Candolle herbaria of the Conservatory and Botanic Garden of Geneva are much visited by botanists because of the great number of historic and type specimens that they possess, and several months more will be needed to complete the photographic work on them. Since specimens of the De Candolle Herbarium, which is doubtless the most famous single large plant collection in the world, are never lent outside the herbarium, photographs of its type specimens are particularly valuable for use in America and other countries. For more than a century the botanists of Geneva have been celebrated for their friendliness toward visitors, and for their cooperation with botanists of other countries, and Mr. Macbride has received the most enthusiastic and kindly assistance from the present director of the herbaria, Dr. B. P. Georges Hochreutiner, who has helped in every possible manner to make the work a success.

Special mention should be made of the assistance of Dr. Gustave Beauverd of the Boissier Herbarium and Professor Robert Chodat of the University of Geneva, who courteously lent for photographing a large number of types of the Boissier Herbarium, particularly palms and orchids. Mr. Macbride's work was aided, also, by a generous loan from the Botanical Garden of Leningrad, through Professor B. A. Keller, of certain types of palms of which photographs were made.

It would be impossible to exaggerate the value of this photographic work, which has now been continued some four and a half years. The 26,000 photographs thus far obtained represent a great advance in the practical work of systematic botany in America. Formerly, in the determination of large collections of plants from South America, it was almost imperative to visit European herbaria to make exact identifications, but with these photographs at hand it is now possible to make determinations with almost as great ease as if the original specimens were before one's eyes. While the advantages are most immediately apparent in the Herbarium of Field Museum, they are also available to botanists generally in the United States and other countries, for prints from these negatives

are available at cost of printing to all institutions and individuals desiring them.

During the year the Museum Herbarium has been in constant use not only by the staff of the Department of Botany, but also by an unusually large number of visitors from all parts of the United States and various foreign countries.

The large plant collections received during the year have occupied fully the time of the Herbarium staff. Through the employment of an additional assistant in plant mounting, it has been possible to prepare for insertion in the Herbarium a large quantity of exceptionally valuable and useful material, chiefly from Central and South America. In the latter part of the year the number of plants mounted was further increased due to assistance received from extra workers furnished by the Illinois Emergency Relief Commission and the Civil Works Service of the federal government. All the mounted material has been distributed promptly into the permanent collections, for expansion of which several new steel cases have been provided.

There were submitted to the Herbarium for study and determination 199 lots of plants, consisting of 10,330 specimens. Of these, 52 lots, consisting of 2,318 specimens, were named and returned to the senders, while 147 lots, comprising 8,012 specimens, were retained by the Museum. In addition, there were determined many plants of the Chicago region, brought to the Museum by visitors, teachers, and students, or forwarded by mail. There were answered, also, many inquiries by mail and telephone, calling for the most diverse information upon botanical subjects.

Associate Curator Paul C. Standley published fourteen papers based more or less directly upon the Herbarium collections, five of them, dealing with American trees, in *Tropical Woods*. His *Flora of Barro Colorado Island, Panama*, with 178 pages, a map, and twenty-one plates, was issued as No. 5 of the Contributions from the Arnold Arboretum of Harvard University.

Members of the Department staff prepared for *Tropical Woods* many abstracts and reviews of current literature relating to tropical trees and shrubs, and contributed numerous signed articles and brief items to *Field Museum News*.

ACCESSIONS—BOTANY

During 1933 the Department of Botany received 251 accessions, comprising 30,227 specimens, both numbers being somewhat lower

than those of the preceding year, although the value of the material was perhaps equally great. The accessions consisted of specimens for the Herbarium, for the exhibits, and for the wood and economic collections. Of the total number, 7,047 were gifts, 13,185 were received through exchange, 732 were purchased, and the rest were derived from miscellaneous sources.

Of the Department's total receipts of 30,227 specimens, those for the Herbarium amounted to 29,794 items—plant specimens, photographic prints, and negatives. The largest and most important accession of the year consisted of 2,400 specimens from the Conservatory and Botanic Garden of Geneva, received in exchange through the courtesy of the Director, Dr. B. P. Georges Hochreutiner. The two shipments containing this material are among the most valuable and useful consignments of herbarium specimens ever dispatched from Europe to the United States. They consist chiefly of historical collections, principally from South America. Most of them are duplicate types or critically determined specimens. These shipments have added to the Museum many hundreds of species which previously were not represented here, and probably not in any other American museum.

Another collection of valuable specimens of the same nature was received in exchange from the University Botanical Museum of Copenhagen, through Dr. Carl Christensen. The material contains 947 specimens, likewise largely of South American plants, particularly from the Brazilian collections of Warming and Lund. Mexican and Central American plants obtained by Liebmann and Oersted are also included. A large proportion of these specimens represent type material.

From the previously mentioned photographic negatives of type specimens of tropical American plants made in European herbaria by Assistant Curator Macbride, there were added to the Herbarium about 2,500 prints, thus making available for comparison many species not formerly represented. Three other American institutions purchased from Field Museum 2,377 prints from these negatives.

While under existing financial restrictions it has not been possible for the Museum to buy some of the highly desirable series of tropical plants which have been offered for sale, the Herbarium has nevertheless received a large amount of highly valuable material through gifts and exchanges. Many of the most desirable contributions have been received in return for the determination of the specimens. A striking example is a lot of 1,071 plants of the Yucatan peninsula,

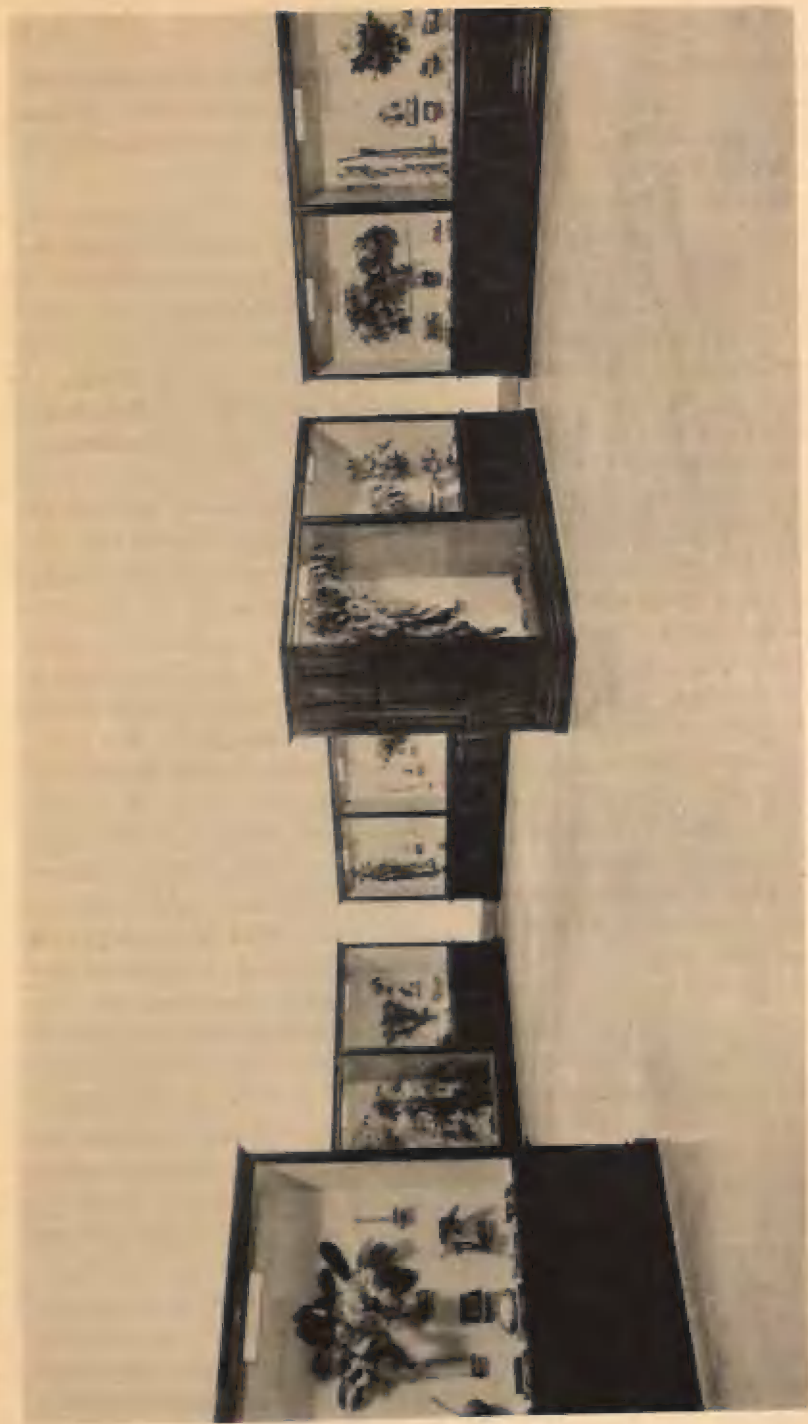
forwarded for determination by the Department of Botany of the University of Michigan, through Professor H. H. Bartlett. These make a substantial addition to the Museum's already unequalled representation of the flora of that unique region.

The Companhia Ford Industrial do Brasil, of Pará, Brazil, has continued its sendings of herbarium and wood specimens from the Amazon Valley, and during 1933 forwarded herbarium material of 203 trees and other plants, most of which supplement collections obtained in earlier years. Other important Brazilian collections received include 292 plants obtained by Mrs. Ynes Mexia, of Berkeley, California, and 210 specimens collected by José Frambach and presented by Dr. B. E. Dahlgren, Acting Curator of the Department of Botany.

Deserving of special mention among the gifts to the Herbarium during 1933 are 652 plants from Colombia, presented by the collector, Mr. Alexander E. Lawrance, of Bogotá; 474 specimens, chiefly from the Eggers Ecuador collections, presented by the University Botanical Museum, of Oslo, Norway; 562 plants, chiefly trees of Central and South America, presented by the School of Forestry of Yale University, through Professor Samuel J. Record; 436 Costa Rican plants, received from the National Museum of San José, through Professor Manuel Valerio; 225 Costa Rican specimens, collected and presented by Professor Harvey E. Stork, of Northfield, Minnesota; 314 plants of British Honduras, collected and presented by Mr. William A. Schipp, of Stann Creek in that country, continuing his previous series; 474 Mexican plants presented by the collector, Mr. C. H. Mueller, of Cuero, Texas; 348 Mexican plants presented by Mr. H. W. von Rozynski, of Jaumave, Mexico; 225 plants of the United States, collected and presented by Mr. Hermann C. Benke, of Chicago, who previously had contributed other extensive collections to the Herbarium; and 324 specimens, chiefly Hawaiian Compositae, given by Dr. Earl E. Sherff, of Chicago.

Besides the collections specifically mentioned above, the Museum received through gifts and exchanges much other valuable herbarium material from tropical America, the United States, Canada, and other parts of the world. A summary of this will be found in the List of Accessions for the year (p. 94 of this Report).

The number of specimens accessioned during the year especially for the economic collections numbered 437. Some of the principal ones are mentioned in the account of the new installations made during the year (p. 50). Among others worthy of special mention



SOUTH END OF HALL OF PLANT LIFE
(Hall 29)



are sheets of crêpe and vulcanized rubber from the Firestone Tire and Rubber Company, of Akron, Ohio; specimens of rubber from Sumatra presented by Van Cleef Brothers, of Chicago; eight planks of Brazilian woods, representing Amazonian timbers at present being marketed in the United States, from the Ford Motor Company, Dearborn, Michigan; specimens of Honduras rosewood and padauk from Mr. W. S. Scribner of the Craftsman Wood Service Company, Inc., Chicago; and a trunk of a *Livistona* palm from the Garfield Park Conservatory, Chicago.

For the mahogany exhibit, Park Richmond and Company, of Chicago, presented an unusually fine board of Santo Domingo mahogany; T. Hofmann-Olsen, Inc., of New Orleans, Louisiana, gave two boards of Cuban mahogany, plain and figured; the Mengel Company, of Louisville, Kentucky, a board of Honduras mahogany; and Ichabod T. Williams and Sons, of New York, a board of Peruvian mahogany.

Through the courtesy of S. C. Johnson and Son, Inc., of Racine, Wisconsin, there were received four specimens of vegetable oils from Ceará, Brazil. From the Palm Oil Company, Plainfield, New Jersey, fourteen samples of palm nuts and oil were obtained. From Mr. G. B. Reuss, Hohen Solms, Louisiana, through the cooperation of the pecan culturist at the Agricultural Experiment Station, University of Florida, there were received fifty varieties of pecan nuts. The Division of Pomology, College of Agriculture, Davis, California, supplied a fruiting branch of jujube and almond trees. Mr. C. M. La Follett, of Salem, Oregon, furnished samples of English walnuts and filberts.

For the paper exhibit, the most notable contributions were samples of linen rag paper from Crane and Company, Inc., Dalton, Massachusetts; linen rag paper from Worthy Paper Company, West Springfield, Massachusetts; bamboo paper from Thomas N. Fairbanks Company, New York; and esparto pulp and paper from the McLaurin-Jones Company, Brookfield, Massachusetts, and from Smith and McLaurin, Ltd., of Milliken Park, Scotland.

Many photographs desired for display in conjunction with exhibits in the various halls were furnished by individuals and scientific institutions among whom may be especially mentioned: the Forest Service and Bureau of Plant Industry of the United States Department of Agriculture; the Arnold Arboretum of Harvard University; Dr. S. A. Barrett, Director of the Public Museum, Milwaukee, Wisconsin; Mr. Hermann C. Benke, of Chicago; and

the Firestone Tire and Rubber Company, Akron, Ohio. Professor Ruben de Souza Carvalho, of São Paulo, Brazil, contributed twenty photographs illustrating the coffee industry of the state of São Paulo.

The Department distributed through exchanges 13,871 herbarium specimens, woods, and photographs to forty-six institutions and individuals of North and South America, Europe, and Asia. Much of the material distributed consisted of duplicates obtained in Peru by the Marshall Field Expeditions. Loans of mounted herbarium specimens amounted to forty-seven lots, comprising 1,963 specimens.

CATALOGUING, INVENTORYING, AND LABELING—BOTANY

During 1933 the permanent collections of the Herbarium were increased by more than 25,000 sheets of plants and photographs, besides several thousand sheets bearing original printed descriptions of new species or other published matter useful for study purposes. The total number of mounted specimens now in the Herbarium is 678,363. There were removed from the collections during the year 1,138 duplicate specimens. The specimens labeled and incorporated into the collections of the Department of Botany as a whole now number approximately 700,000. Additions to the records of the collections of economic material totaled 437 in 1933. New labels were written for a large part of the exhibits in the Hall of Plant Life (Hall 29), for all new exhibits, for the economic reference collections, for thousands of herbarium specimens, and for other thousands of duplicate specimens distributed in exchange.

From the Gray Herbarium of Harvard University 3,602 cards were received in continuation of the index of new species of American plants, and these were inserted in the Museum's file of these cards. Several thousand cards were prepared and added to the catalogue of the Department library for the books and pamphlets on various botanical subjects.

INSTALLATIONS AND REARRANGEMENTS—BOTANY

In the Hall of Plant Life (Hall 29) a great improvement has been effected by a departure from the usual alcove arrangement still maintained in the other halls of the Department. With the blocking up of the windows and the change to artificial illumination, it has been possible to vary the regular succession of equal alcoves which, in this long hall, formerly produced a monotonous effect of long rows of exhibition cases, giving prominence to them rather than to their contents. The rearrangement has resulted in a much more



TOBACCO PLANT (*Nicotiana glauca*)

(Hall 23)

Reproduced in Plant Reproduction Laboratories,
Department of Botany of the Museum

pleasing appearance of the hall as a whole (see Plate VI). The larger vistas opened facilitate a rapid inspection of the exhibits with much less fatigue to the visitor. The change was accomplished with relatively little work, although it called for a certain amount of reinstallation on account of the new juxtaposition of exhibits.

A considerable amount of new material was added to the exhibits in this hall. To the mallows, hitherto scarcely represented, there have been added some life-like reproductions of plants, prepared in the Plant Reproduction Laboratories of the Museum. An inspection of this new installation reveals at a glance that this family includes not only various important food plants, such as the potato, tomato, eggplant, and the pimientos, but also the scarcely less important tobacco plant, as well as various poisonous and drug-producing plants such as stramonium and belladonna. The reproduction of a flowering branch of the purple and white *Brunfelsia*, which was placed on exhibition last year, acquires a new interest now that it is found in its proper botanical association with the more widely known examples of this family.

Gourds, cucumbers, squashes, and their allies, form another family of economic importance that has also been lacking from this hall until recently. A beginning toward its representation has been made by the installation of a half case.

The Panama hat palm represents an interesting plant family which partakes of the botanical characters of both aroids and palms. The species which furnishes material for the famous hats of Ecuador and Peru, commonly attributed to Panama, is shown by a handsome reproduction prepared from material obtained by the Stanley Field Guiana Expedition in 1922. Besides serving its purpose as a botanical exhibit, this specimen is an especially interesting example of Museum technique in the employment of celluloid for the representation of plant forms. This exhibit supplements the one in Hall 28 showing the various steps in the manufacture of a Panama hat.

The aroids are now well represented, a notable addition this year being a reproduction of *Montrichardia*, a large aquatic calla lily of the rivers of northern South America. It is one of the chief food plants of the hoatzin, a primitive claw-winged crested bird. Material for this, as well as for most of the items added to the exhibits of which mention follows herewith, was secured in Pará in 1929 by the Marshall Field Botanical Expedition to the Amazon. Perhaps the most interesting, and certainly the most striking of these, is a reproduction of a cluster of the edible, brilliantly colored

fruit of the peach palm. In size and appearance this fruit, which grows in large grape-like bunches, is more like the apricot than like the peach. It is starchy, has a chestnut-like flavor when cooked, and is highly esteemed as an article of food where it grows.

A *Rollinia* called "biribá," a large edible fruit of the custard-apple or cherimoya family, as yet little known outside of the tropics; a fruiting branch of *Lucuma*, "abiu," of the sapodilla family; and a branch of *Sterculia*, "cupuassu," with its large cacao-like fruit, have all been reproduced from material and studies on hand, and have been added to the exhibits. The cupuassu is common in the lower Amazon region where its fruit is esteemed rather for its fragrant and delicious pulp than for its seeds which furnish a cacao differing little from that of the cacao tree proper.

A "hand" of the large banana-like plantain and, by way of contrast in size, one of the small-fruited or dwarf bananas, have been added to the case containing the banana plant. Other minor additions to the plant reproductions in the hall are tubers of the Polynesian starch plant *Tacca*; a watermelon-like citron; and the chayote, a cucurbitaceous fruit or vegetable of the American tropics, now grown successfully in Florida.

The large and important rose family, which supplies the majority of fruits in the temperate zone, such as peaches, plums, cherries, and many common berries, has long been rather poorly represented in the hall. A recent addition to this exhibit is a splendid reproduction of an apple branch.

An excellent reproduction of a small fruiting branch of the sweet gum or liquidambar, of the witch-hazel family, has also been completed and installed in its appropriate place among the exhibits.

A half case of interesting material, mostly dried or woody, has been added to the cactus exhibit, together with some remarkable photographs of the giant cactus of the southwest, kindly furnished by Professor C. J. Chamberlain of the University of Chicago.

A large number of photographs have been added to the exhibits to illustrate various plants and features of plant life which otherwise could not be shown.

A handsome reproduction of a tobacco plant in flower has been placed in Hall 25 in conjunction with the economic exhibits of tobacco (see Plate VII).

The most important collection of economic plant material installed in Hall 28 during the year is that of essential oils, resinoids,

and essences. The series, consisting of seventy-five items, was presented by Fritzsche Brothers, Inc., of New York, due to the interest of Messrs. B. F. and M. B. Zimmer, their representatives in Chicago. Many of the oils were manufactured by Schimmel and Company, of Miltitz, near Leipzig, Germany, which also lent a number of pictures, and these were copied for display in conjunction with the exhibit. With each item there is shown material such as leaves, twigs, bark, or wood to indicate the source of the oil. Some of these were furnished by Parke, Davis and Company, of Detroit, Michigan; Vaughan's Seed Store, Chicago; the Garfield Park Conservatory, Chicago; and the United States Department of the Interior, Virgin Islands office.

An interesting exhibit added in 1933 is that of the Pará rubber tree (*Hevea brasiliensis*). The species is represented by two trunks, one from a plantation in Sumatra, donated by Van Cleef Brothers and Williamson Rubber Process Company, of Chicago, and the other from the islands of the lower Amazon, selected and photographed by the Marshall Field Botanical Expedition to the Amazon in 1929, and recently forwarded through the courtesy of Mr. Emilio Kauffmann, of Pará, Brazil. The specimen from Sumatra shows the herringbone method of tapping, generally practised on plantations, while that from Brazil shows the antiquated method of making incisions in the trunk with a small hatchet, still in use in parts of the Amazon forests. The exhibit includes also a reproduction of a fruiting branch of the rubber tree, based on material obtained in Pará by the Marshall Field Expedition of 1929; typical specimens of crude Pará rubber, showing the form in which it is marketed; and implements commonly used for tapping. This installation serves as a nucleus for an exhibit of rubber in general, and another case showing various other species is in preparation.

There was also installed in Hall 28 a series of the most important vegetable waxes, such as carnaúba, bayberry, candelilla and Japan wax. The carnaúba wax is especially well represented by several grades showing the classification generally adopted for commercial purposes in the localities of its origin in Brazil.

To the large photographs displayed in this hall, there were added pictures illustrating the sources of important plant products and phases of the industries connected with them. These include photographs of the tung oil tree of China, the kauri tree of Australia, the Chinese lacquer tree, a rubber plantation in Sumatra, a scene in a rubber warehouse in Pará, oil seeds on an Amazon dock, and

a chicle gatherers' camp in Yucatan. For their courtesy in supplying pictures from which some of the enlargements were made, the Museum is indebted to the Firestone Tire and Rubber Company, Akron, Ohio; the Arnold Arboretum of Harvard University; and the National Geographic Society, Washington, D.C.

The paper and tobacco exhibits received some further additions. To the display of cereal products there was added material given by the American Institute of Baking, of Chicago; Mr. N. Emmerson, of Chicago; and the International Milling Company, of Minneapolis, Minnesota.

The most important addition to the foreign woods displayed in Hall 27 is a series of mahoganies, obtained from various sources as noted under Accessions (List of Accessions, p. 94). One case is devoted to American species, represented by boards of Santo Domingan, Cuban, Honduran, Mexican, and Peruvian mahoganies of the genus *Swietenia*. In another half case are shown West and East African mahoganies of the closely related genus *Khaya*. The exhibit is of unusual interest as it affords opportunity to compare the figure and color displayed by the different species.

Another attractive addition is a group of five panels representing important Brazilian timbers, most of them well known in the American market, and mentioned as a gift from the Ford Motor Company among last year's accessions.

To the series of North American trees in Charles F. Millsbaugh Hall (Hall 26) there were added two species from the Pacific coast, western red cedar (*Thuja plicata*) and incense cedar (*Libocedrus decurrens*). Other species, still lacking in this hall, are on hand and in the course of preparation for exhibition.

DEPARTMENT OF GEOLOGY

EXPEDITIONS AND RESEARCH

Collecting for the Department of Geology has been limited to work which could be undertaken by members of the Department staff without appropriation for expenses from the Museum. The most important expedition carried out in this manner was that to the Paleocene and lower Eocene formations of Colorado, conducted by Mr. Bryan Patterson, Assistant in Paleontology, in continuation of work he began last year. The party included, besides Mr. Patterson as leader, Messrs. James H. and C. A. Quinn of Ainsworth, Nebraska. After establishing a base camp at Mesa, Colorado, the



FOSSIL SKELETON OF GROUND SLOTH IN THE MATRIX, PAMPA FORMATION, ARGENTINA

Ernest R. Graham Hall (Hall 23)

Marshall Field Paleontological Expedition to Argentina, 1934-37

party worked in the Plateau Creek valley and along the Mesa-Debeque road.

A remarkable discovery, when the scarcity of fossils in these early formations is considered, was three intermingled skeletons, more or less complete, of the rare and interesting mammal, *Titanoides faberi*. Removal of these occupied the party for most of the summer. A small series of lower Eocene fossils was collected during a reconnaissance which extended northwards from Mesa as far as Riffle, Colorado. The expedition collected forty-seven specimens of fossil mammals, two fossil turtles, and a fossil lizard.

Assistant Curator Sharat K. Roy, accompanied by Mr. Floyd Markham, of Chicago, spent several weeks in September collecting invertebrate fossils in New Jersey, New York, and Pennsylvania. The expedition was primarily for the purpose of strengthening the Museum's Cambrian collections, and it obtained much choice material. Collecting was not confined to the Cambrian, however—the 615 specimens gathered ranged in age from Cambrian to Cretaceous, and included seven fossil fish as well as all classes of invertebrates. On two week-end trips to Blue Island, Illinois, Mr. Roy and Mr. Markham obtained twenty-three Silurian fossils.

Writing for publication has been carried on by Mr. Elmer S. Riggs, Associate Curator of Paleontology, and by Mr. Patterson, as opportunity offered. A preliminary description of the newly discovered South American marsupial sabertooth, *Thylacosmilus atrox*, a fossil of unusual interest, appeared as a Museum publication, and a memoir on the same fossil was read by Mr. Riggs before the American Philosophical Society and submitted to that society for publication. Mr. Patterson contributed to the *American Journal of Science* a short paper describing a new species of Paleocene amblypod, *Titanoides faberi*, and a more complete description of it was published in the *Proceedings of the American Philosophical Society*.

Investigation and description were actively continued of various portions of the collections made by the Marshall Field Paleontological Expeditions to South America, conducted from 1922 to 1927. The monograph on the Cerro Cuadrado petrified forest of Patagonia, based on collections made by these expeditions, which was submitted to the Museum by Dr. G. R. Wieland of Yale University last year, has been forwarded to the Carnegie Institution of Washington, D.C., for publication.

A description by Assistant Curator Roy of a remarkable new trilobite, *Dalmanites pratteni*, appeared as a Museum publication.

Two other papers by Mr. Roy, one on a new *Phyllocarid*, and the other on a new *Conularia*, have been completed and submitted for publication.

A biographical memoir of the late Dr. Oliver C. Farrington was written by Mr. Roy, and read by him at the December meeting of the Geological Society of America, and it is to be published by that society. Dr. Farrington, who had been Curator of the Department since 1894, died in November. A brilliant scholar, noted for his knowledge of all branches of geology, and especially renowned as one of the foremost authorities on meteorites and on gems and gem minerals, his death meant a great loss to the Museum and to the scientific world. His passing was felt with especial keenness by his associates in the Department of Geology, among whom he was held in truly affectionate regard, as well as the highest respect as a scientist of great erudition and a museum worker of outstanding skill.

Work on Mr. Roy's monograph on the paleontology of southeastern Baffinland has progressed normally. During the year it reached the stage where a comparative study of two earlier collections made by Charles Hall and the Seventh Peary Expedition was necessary. These collections are deposited in the American Museum of Natural History, New York, and in the United States National Museum, Washington, D.C. Mr. Roy visited each of these institutions for several days, making these comparisons.

The reported discovery of living bacteria in stony meteorites by Professor Charles B. Lipman, of the University of California, Berkeley, California, has aroused much interest and controversy in geological and biological circles, as this discovery, if confirmed, would point to a possible extra-terrestrial origin for the life of the earth. The discovery needs confirmation, and no more favorable place could be found than this Museum for the work necessary to this end. The Museum has the largest of all meteorite collections, and much research on meteorites has been done here. Also, the resources of the bacteriological laboratory of the University of Chicago and the cooperation of the bacteriologists there, are available. Mr. Roy has begun and nearly completed this work, using for this purpose four meteorites from the Museum collection, and the equipment of the university's bacteriological laboratory. The interest and cooperation of Dr. Noel Hudson of the university, and his assistant, Mr. Floyd Markham, have been invaluable. Mr. Roy has closely followed Professor Lipman's procedure so that the results of the two investigations may be comparable.



SELENITE CRYSTALS FROM CHILE

(Hall 84)

Marshall Field Brazilian Expedition, 1926

In the chemical laboratory of the Museum the numerous tests and analyses needed for identification of specimens were carried on as usual. An investigation of the nature of the corrosion of one surface of the Gladstone meteorite was made preparatory to its exhibition. A quantitative analysis of a chert was made, for publication, by Acting Curator Henry W. Nichols and Assistant Curator Roy. Ten analyses and identifications requiring chemical work were made for the Department of Anthropology, and for the same Department a bronze was treated by the Fink process. An investigation of a de-greasing problem was made for the Department of Zoology by Acting Curator Nichols and a member of the Zoological Staff. The facilities of the laboratory were used by a member of the Botanical Staff for the determination of the specific gravities of various woods. Some tests needed for the maintenance of the building were also made.

Mr. Nichols participated in the organization meeting of the Society for Research on Meteorites which was held at the Museum. This meeting took place several months before the death of Curator Oliver C. Farrington, who was elected Honorary President of the organization. Mr. Nichols was elected a councilor.

Members of the Department Staff contributed fourteen signed articles, and twenty-two unsigned articles and short items, to *Field Museum News*, and supplied data for twenty newspaper articles. Visiting scientists and members of museum staffs were received in the Department in unusually large numbers. Among the distinguished foreign visitors were Sir Arthur Smith Woodward and Mr. W. Campbell Smith, of the British Museum; Sir John Flett, of the Geological Survey of Great Britain; Dr. Victor van Straelen, Director of the Royal Museum of Natural History at Brussels; Dr. H. A. Brouer, of the University of Amsterdam; Professor Richard Willstätter, of Munich; M. Leon Bultingaire, of the Museum of Natural History of Paris, and Dr. A. W. Grabau of the National University of Peiping, China. These, as well as numerous visitors from American museums, were shown through the Department workrooms, and methods of installation and preparation used at this institution were discussed with them.

Requests from correspondents and visitors for information and identification of specimens were received in even larger numbers than usual. Many visitors to A Century of Progress exposition brought specimens from home to the Museum for identification.

There were 307 correspondents and 441 visitors referred to the Department for these and similar services.

ACCESSIONS—GEOLOGY

Accessions were received during the year from sixty-four sources. Of these, fifty-six were by gift, seven by exchange, one by purchase, and three were collections made by members of the Department Staff. The specimens included in these accessions totaled 1,421.

The most important gift of the year was a collection of fifty-five cut gems brought from the island of Ceylon and presented to the Museum by Prince M. U. M. Salie, Ceylonese gem merchant. The collection includes examples of all the more important precious stones found in Ceylon, and embraces every color through the entire spectrum from red to violet, with colorless varieties as well. Outstanding in beauty and interest are the sapphires, star sapphires, rubies, a star ruby, aquamarines, moonstones, and an oriental amethyst sapphire. The collection is an important addition to the gem collection in H. N. Higinbotham Hall (Hall 31).

Mr. Stephen Varni, of New York, presented a series of specimens illustrating the several stages of cutting a "varnistar" from rock crystal. These stages are, in a general way, the same as those of cutting any faceted gem, but as the star is large, the stages can be better seen than if an ordinary gem were used. As the star is brighter than the crystal from which it is cut, the series has been provided with a label explaining in detail why the brilliancy and fire of a gem is increased by proper cutting.

A cabinet of eight tubes containing rare gases of the atmosphere was the gift of the Air Reduction Sales Company of Chicago. The gases shown are exceedingly rare elements—argon, neon, helium, krypton, and xenon—which are found in the atmosphere only in the most minute quantities. These gases are transparent and invisible in their ordinary state, but can be made to glow brilliantly in characteristic colors when excited by an electric current applied under suitable conditions. In order to permit the gases to be seen they are placed under reduced pressure in tubes which have electrodes for application of an exciting current. The cabinet has been provided with a push button and transformer. When the button is pressed each tube glows with its characteristic color. These tubes also illustrate the phenomenon of fluorescence. Some of the gases are shown in two tubes, one of plain glass and the other of a glass in which

is incorporated a fluorescent substance, so that the glow of the gas excites a brilliantly colored fluorescence in the glass.

The Standard Oil Company (Indiana) presented seventy-four specimens and sixty photographs which present a synopsis of the multitudinous uses of the products of petroleum. This synoptic collection now occupies a large case placed in a prominent position in the central aisle of Hall 36.

The mining industry of Poland is now well represented in the collections as the result of a gift of sixty-one ores and minerals of that country presented by the Polish Institute for Collaboration with Foreign Countries, of Warsaw.

Although the basic plan of A Century of Progress exposition is such as to preclude the possibility of obtaining from it such large accretions to the collections of the Department as came from earlier world's fairs, two accessions of importance have been secured from this source. One is the gem collection presented by Prince M. U. M. Salie, which has been mentioned above. Another is a gift of twenty-seven specimens of ores of Washington presented by the Northwest Mining Association of Spokane, Washington. This represents late aspects of mining in that region, and is important enough to compel a thorough revision of the exhibit of the mineral resources of that state. A number of other collections which were especially desired were secured through the efforts of the Acting Curator, but due to the continuance of the exposition in 1934 they could not be delivered immediately.

A nine-inch cubic crystal of fluorite growing out of a mass of the mineral, which was presented by the Crystal Fluorspar Company, of Elizabethtown, Illinois, forms a welcome addition to the small group of exceptional minerals displayed in individual cases in Hall 34.

Mr. William B. Pitts, of Sunnyvale, California, presented a small collection of agate and opal of more than usual merit. Specimens of the rare native lead from two hitherto unrecorded localities were presented by Mr. Frank Von Drasek, of Cicero, Illinois, and Mr. Robert R. Lipman, of Chicago. Mr. James Manning, of Chicago, contributed an example of placer gold ore from the vicinity of Nome, Alaska, which was unlike specimens already exhibited. The Chisos Mining Company, of Terlingua, Texas, contributed fifteen examples of the mercury ores of that district, which had hitherto been inadequately represented in the collections.

Mr. Darsie A. Green, of Norman, Oklahoma, presented two geodes of an unusual kind not hitherto represented in the collections.

The Houston Museum of Natural History, of Houston, Texas, presented an attractive specimen of pink calcite. A specimen of uranophane and four other minerals from the pegmatite deposits of North Carolina were presented by Mr. Burnham S. Colburn, of Biltmore, North Carolina. Three specimens of two newly discovered species of fossils, one a crustacean, and the other a pteropod, were collected and presented by Mr. Floyd Markham, of Chicago. They are now being named and described by Assistant Curator Roy. A specimen of the rare rock, rhombenporphyry, which is seldom found elsewhere than in Norway was collected at Oslo by Mr. Johan Eriksen of that city and presented to the Museum.

Mr. Fritz Ackermann, of Bahia, Brazil, presented two phantom quartz crystals of unusual excellence. Mr. A. C. Jones, of Cicero, Illinois, contributed four choice specimens of wulfenite and cerussite. Mr. Herbert C. Walther, of Chicago, besides adding a specimen of molybdenum to the rare element collection to which he has so liberally contributed in the past, contributed to the mineral collection specimens of ulexite, trona, and halite. Three sylvites from New Mexico, which were needed additions to the collection of potash minerals from American localities, were presented by Mr. O. J. Dowling, of Carlsbad, New Mexico. A specimen of diaspore, contributed by the A. P. Green Fire Brick Company, of Mexico, Missouri, is an example of a mineral which has become of economic importance in recent years. An interesting specimen, presented by Mr. Frederick Blaschke, of Cold Spring-on-Hudson, New York, consists of gravel mixed with grains of placer gold which had been picked up by a duck and found in the bird's crop.

The principal accretions to the invertebrate fossil collections were the 615 specimens from Assistant Curator Roy's expedition to New Jersey and adjacent states. The full value of this collection cannot be determined until it is worked out, a task which will take some time.

Three fossils from Blue Island, Illinois, represent two new species and are of such interest that descriptions of them have been prepared for publication.

The fifty-one specimens from Assistant Patterson's expedition to Colorado are more valuable than the number would indicate. The three *Titanoides* skeletons provide material for a mount of this large and rare mammal. Researches by members of the Department Staff, based upon these specimens, which are more complete than any before known, have increased knowledge of the nature and relations

of this hitherto almost unknown animal. The lower jaws of a shovel-tusked mastodon from Mongolia were received from the Fourth Asiatic Expedition of the American Museum of Natural History, in which Field Museum cooperated. Mr. James H. Quinn, of Ainsworth, Nebraska, presented eighteen specimens of fossil mammals and one fossil reptile. Other citizens of Ainsworth who contributed are Mr. Leslie K. Quinn, who presented a partial skeleton of a fossil rodent, and Mr. Fred E. Herre, who gave the jaw of a fossil mammal. Another mammal jaw was contributed by Mr. Vergil Deardorff, of Silt, Colorado.

The skeleton of a *Plesippus* was obtained by exchange with the United States National Museum, Washington, D.C., to supplement the growing series of fossil horses. Fifteen barites and four tufas were obtained by exchange with Mr. F. G. McIntosh, of Beverly Hills, California. Three specimens of French bauxite, obtained by exchange with the Salgues Foundation of Brignoles, France, permit a better presentation of the important French aluminum ores.

One hundred twenty-nine fossil plants, including four fossil cones, were obtained through an exchange of duplicates with Dr. Ralph W. Chaney, of the University of California, Berkeley, California, and etched sections of two meteorites were received by exchange from the United States National Museum, Washington, D. C.

Eighteen specimens of meteorites and crater products from the recently discovered meteorite craters of Henbury, Australia, have been received by exchange with the Kyancutta Museum of South Australia, and constitute the most important addition to the meteorite collection since the acquisition of the Ward collection many years ago. The specimens of the meteorite are accompanied by other specimens which show the effects of the terrific heat generated by the impact with the earth of thousands of tons of iron moving at high velocity. Some of the specimens are fragments torn from the iron meteorite while in a plastic state at the moment of impact. Others are rock fused to lava and thrown out of the craters, and silica-glass formed from melted sandstone.

CATALOGUING, INVENTORYING, AND LABELING—GEOLOGY

New entries recorded in the Department catalogues, now comprising twenty-six volumes, totaled 1,421 during 1933. These, added to previous entries, give a total of 191,820.

Preparation of copy for new labels, and for replacing labels on black cards with buff-colored ones, was carried on continuously during the year. A total of 1,215 labels was written and sent to the Division of Printing. In order to afford information regarding the exhibits until the permanent labels are ready, eighty-nine temporary typewritten labels were written and installed. A total of 644 labels was received during the year from the Division of Printing.

The number of photographic prints added to the Department albums was eighteen, bringing the total of such prints to 7,498. Labels for all prints were prepared and filed with them. Ninety-five new United States Geological Survey maps were received, filed, and labeled, making the number of these maps now available 3,848.

INSTALLATIONS AND REARRANGEMENTS—GEOLOGY

The exhibits of the Department were disturbed as little as possible by changes of installation during the period of A Century of Progress exposition because of the influx of visitors to the Museum at that time. Only two changes involving moving or emptying cases were made, and other work of installation was limited as far as was practicable to the opening and closing months of the year when the fair was not in progress.

The collection of fifty-five Ceylonese gems presented during the year by Prince M. U. M. Salie, as mentioned under Accessions (p. 58), was installed in H. N. Higinbotham Hall (Hall 31), the stones being distributed among the collections in their proper places according to their relation to other gems previously exhibited. This new material greatly augments the value and interest of the collections in this hall as a whole.

In Hall 34 three cases, made in the Department workrooms, have been added to the new series of small cases for the prominent display of large, choice minerals which was started by the installation of a single case last year. These cases, which are twenty inches square and forty-six inches high, are glazed on all four sides and conform in style with the other cases in the hall. They are placed against the A-shaped cases of the alcoves facing the aisle so as to provide a prominent position for the fine specimens they contain. A series of twelve such cases is contemplated. The others will be installed from time to time as suitable material becomes available. The cases installed this year contain a large mass of lapis lazuli

from Peru, two tall selenite columnar crystals from Chile (see Plate IX), and a fluorite crystal from Illinois.

Where it has been necessary to install two or more rows of specimens on a wide shelf the view of the rear row is more or less obscured by the specimens in front. To overcome this to a degree a combined block and label holder has been designed which raises the specimen with its label so that it can be seen. The specimens thus raised also serve to break up the rather monotonous flat surface of the back of the case. In many cases the view of small crystals is obscured by the accompanying label unless the label is placed to one side of the specimen, which is undesirable. A small supporting block entirely concealed by the label has been devised to obviate this difficulty. Five hundred and sixty-two blocks of both of these types have been made in the Department and installed in ten cases.

Eighteen specimens of meteorites, and the products of their impact on the earth, from the recently discovered meteorite craters of Henbury, Australia, have been installed in Hall 34 directly opposite the large collection of meteorites from the earlier known and larger meteorite crater at Canyon Diablo, Arizona. This makes the third of the world's five generally recognized craters to be represented in the collections. In addition to the Henbury specimens two other meteorites have been added to the collection.

A group of five specimens showing the process of cutting a crystal star from rock crystal has been added to the collection of forms of gems and cut stones in the same hall. As this collection demonstrates the increase of brilliancy imparted to gems by skillful cutting it has been provided with a label which explains, in detail, the reasons for the increase of fire and brilliancy.

The former exhibit of rare gases of the atmosphere has been withdrawn and replaced by a larger and more efficient collection installed in a different location. The new exhibit consists of five rare gaseous elements from the atmosphere in tubes so arranged that they glow under the passage of an electric current when a button is pressed. It has been installed on the bridge connecting Hall 36 and Frederick J. V. Skiff Hall (Hall 37).

In Hall 36 the collections have been increased by the addition of such specimens as have been received during the year. The collection of liquid products of petroleum which occupied a large case in the center aisle of the hall has been discarded and replaced by an improved collection presented by the Standard Oil Company (Indiana). The new collection is installed on a pyramid in a large

square case with exhibition faces on all four sides. Each specimen is accompanied by a photograph which shows one of its principal uses. As there are thousands of petroleum products it has not been possible to illustrate the subject in detail, but a synoptic collection of seventy specimens has been assembled which shows the great diversity of the products and their uses, and includes many uses unsuspected by the average visitor.

The principal change in Frederick J. V. Skiff Hall (Hall 37) is the replacement of 518 of the old-style black labels by labels of the new type which match the background of the cases. Two of the large gypsum crystals from South America have been removed and reinstalled in an individual case in Hall 34 as an addition to the mineral collection. Additions of specimens received during the year have been made to the collections in seven cases. An example of potash minerals from a mine in the newly discovered field in Texas and New Mexico now supplements the former specimens from this field which were obtained from drill holes. A better specimen of the French bauxite has replaced an unsatisfactory one. The collection of rare elements has been increased by additional gifts from Mr. Herbert C. Walther, of Chicago. Several fluorites of Illinois have been added to the fluorite collection, and specimens have been added to the gold, copper, and nickel collections.

In Ernest R. Graham Hall (Hall 38) a highly interesting and educational group called "Fossil Skeleton in the Earth" (see Plate VIII), prepared by Mr. Phil C. Orr, of the Department Staff, was installed. The specimen is one of the giant sloths, *Scelidotherium bravardi*, from the pampas formation of Argentina, and was collected by the Marshall Field Paleontological Expedition of 1927. It is mounted in the position in which it was found in a sandy clay bed a few feet below the surface. It had been exposed by a small wash which had cut away its banks at high water. A section of the terrane is shown in the background, clumps of pampas grass are used as accessories, and a glimpse of the landscape is shown by a painted background by Mr. Charles A. Corwin, Staff Artist. This group serves well to show how animals are covered over in an alluvial formation, how they are preserved for long periods as fossils, and how they are again brought to light by stream erosion.

Fifteen smaller vertebrate fossils were also installed, as were two descriptive labels, forty-one short labels, and a photograph.

The introduction of new exhibits has led to some changes and regrouping. The two old models of *Plesiosaurus* and *Ichthyosaurus*



ORANG OR ORANG-UTAN, BORNEO

William V. Kelley Hall (Hall 17)

Taxidermy by Carl E. Akeley. Reinstallation by Leon L. Pray

have been removed from exhibition. In order to make room for the new group, the skeleton of the Irish deer and the model of the moa have been moved from their former places in the north end of the hall to new positions nearer the center. This has improved the balance of the exhibits.

In the laboratories of vertebrate paleontology preparation of specimens has been continued throughout the year by Mr. J. B. Abbott and Mr. Orr of the Staff. Mr. J. H. Quinn, a skilled preparator, served three months as a volunteer worker. Work in this laboratory included, besides the major task of preparing and mounting the group "Fossil Skeleton in the Earth," the preparation of a number of other fossil mammal specimens. South American fossil mammals prepared and in process are two skulls of *Ancylocoelus*, one skull of *Rhynchippus*, two of *Thoatherium*, three skulls and two jaws of *Equus andium* and the carapace of the large glyptodont, *Panochthus*. Another foreign fossil mammal specimen prepared and mounted is a pair of jaws of the strange shovel-tusked mastodon of Mongolia, *Platybelodon*. North American fossil mammals prepared include a skull and jaws of the rare horned gopher, *Epigaulus hatcheri*, and three skulls and various skeletal parts of the rare and hitherto little-known Paleocene mammal, *Titanoides faberi*.

In the laboratory of invertebrate paleontology five sections of fossils were made, and fifty-one fossils were prepared. Mr. Lawrence Brundell, a student volunteer assistant, worked for two months on the fossils of the Chicago area, performing satisfactory work.

The reserve and study collections of economic geology material, which were originally labeled and arranged in systematic order in trays in Room 120, have for some years been outgrowing the space assigned to them. These collections have been completely reorganized and rearranged. They are now classified geographically and by kinds in trays in such shape that any wanted specimens can be readily found. The utility of the rearrangement has been demonstrated several times during the year when visitors to A Century of Progress came to the Department for the purpose of studying groups of specimens for which room has not been found in the exhibition cases.

A much needed specific gravity balance for the chemical laboratory was built by Department labor and is in regular use. Distilled water has been provided by this laboratory as needed for the James Simpson Theatre, and for the Divisions of Photography and Photogravure.

DEPARTMENT OF ZOOLOGY

EXPEDITIONS AND RESEARCH

Through the timely assistance of several patrons, it was possible to carry out one zoological expedition completely, to get another into the field in November ready to begin work and to organize a third which is scheduled to start in January, 1934. The first of these was the brief but successful Hancock-Wegeforth Expedition to Guadalupe Island for Field Museum; the second was the Leon Mandel Guatemala Expedition of Field Museum; and the third the Straus West African Expedition of Field Museum.

The expedition to Guadalupe Island, off the west coast of Mexico, was conducted during April and May, and was made possible mainly through the cooperation of Captain G. Allan Hancock, of San Francisco, and Dr. Harry M. Wegeforth, President of the Zoological Society of San Diego. Essential assistance was received also from the Emily Crane Chadbourne Fund, and from the Mexican government, which courteously supplied the necessary permission to make collections in its territory. Dr. Wegeforth kindly made preliminary arrangements, and the Museum sent Messrs. Julius Friesser and Frank Wonder, of its taxidermy staff, to Los Angeles, where they were received by Captain Hancock and taken to the island on his scientific cruising ship *Velero III*. The object of the expedition was to secure elephant seals for a habitat group, and in less than two weeks' time this was done. Five fine specimens were obtained, ranging in weight from a small one of 250 pounds to a large bull of some 5,000 pounds. The skins and bones reached the Museum in excellent condition, and preparations for the production of the group were rapidly advanced.

The generous support given by Mr. Leon Mandel, of Chicago, made possible the organization of the expedition to Guatemala, with a personnel and equipment adequate for work in various branches of zoology during a period of five or six months. Assistant Curator Karl P. Schmidt is leader of the party, and his major efforts are being devoted to certain special studies in Central American herpetology. Other members of the party are Mr. Emmet R. Blake, of Pittsburgh, ornithologist; Mr. F. J. W. Schmidt, of Madison, Wisconsin, mammalogist; and Mr. Daniel Clark, of Chicago, general assistant. The expedition sailed from New Orleans November 22, landing at Puerto Barrios a few days later and beginning work at once in tropical rain forests near the coast. One of the immediate results was the securing of material for a habitat

group of a handsome species of toucan, a bird characteristic of the American tropics and well suited to the needs of the projected hall of habitat groups of foreign birds. Specimens, accessories, photographs, and notes for this group, complete in all respects, were brought together and shipped to the Museum within a few weeks. Meanwhile, general collecting was reported as successful, and late in December Mr. Mandel sailed to join the expedition and spend several weeks with it in the highlands of central and western Guatemala. The herpetological studies of Mr. Schmidt during the course of this expedition are provided for under a fellowship granted to him by the John Simon Guggenheim Memorial Foundation of New York. The expedition has had the cordial cooperation of the United Fruit Company and the government of Guatemala, which the Museum gratefully acknowledges.

The Straus West African Expedition, generously financed by Mrs. Oscar Straus of New York, was organized in December, and at the close of the year was in final stages of preparation. Under the leadership of Mr. Rudyerd Boulton, Assistant Curator of Birds, this expedition expects to sail from New York about January 25, 1934, for the port of Dakar, Senegal. Besides Mr. Boulton, and Mrs. Straus herself, who is to accompany the expedition over a considerable part of its route, the personnel will include Mr. Frank C. Wonder of Field Museum's taxidermy staff, who has been assigned to collect mammals; Mr. John F. Jennings, of Chicago, who will go as photographer; and Mrs. Rudyerd Boulton, who will accompany the expedition under a grant from the Carnegie Corporation of New York to study and record primitive tribal music.

Work will be carried on in French West Africa, Nigeria and Angola (Portuguese West Africa). Since the natural history of this region is practically unrepresented in Field Museum, results of much value to the institution are expected.

During the year arrangements were made for the Museum to participate, to a limited extent, in the Antarctic Expedition of Admiral Richard E. Byrd, who accepted a commission to obtain specimens of the emperor penguin for a habitat group.

Seven publications were issued in the Museum's Zoological Series. These consisted of descriptions of recently discovered animals or brief accounts of current research. Included are two papers by Dr. Wilfred H. Osgood, Curator of the Department, on South American rodents; two by Assistant Curator Karl P. Schmidt on Central American reptiles; one by the same author on a new Arabian snake;

one by Assistant Curator Colin C. Sanborn on South American bats; and one by Assistant Curator Alfred C. Weed on the fishes known as halfbeaks. Twenty signed articles by staff members and thirteen unsigned articles and short items were contributed to *Field Museum News*. Data were supplied for twenty-six newspaper articles.

Unpublished zoological manuscripts have accumulated and now include those for Parts VII and VIII of the *Birds of the Americas*, by Associate Curator C. E. Hellmayr; *The Fishes of the Crane Pacific Expedition*, by Dr. A. W. Herre, of Stanford University; *The Mammals of Chile*, by Curator Osgood; *African Reptiles and Amphibians in Field Museum*, by Mr. Arthur Loveridge, Associate Curator of Herpetology in the Museum of Comparative Zoology, Cambridge, Massachusetts; *The Turtles of the Chicago Area*, by Assistant Curator Schmidt; and *Types of Lepidoptera in the Strecker Collection*, by the late William Barnes and Mr. F. H. Benjamin, of the United States National Museum, Washington, D.C.

Research on material from past expeditions was continued so far as possible, but while much of this material is still being prepared, catalogued, and incorporated into the collections, time for research is limited. Moreover, the staff's time for research during 1933 was reduced by the necessity of supplying information or otherwise giving personal attention to the unusual number of visiting scientists attending conventions in Chicago, as well as to the many amateur naturalists who presented themselves among the unusually large attendance during A Century of Progress exposition. Associate Curator Hellmayr, working in Vienna, completed work on Part VIII of the *Birds of the Americas* and proceeded with the preparation of Part IX. Curator Osgood continued studies of South American mammals, especially those from Chile; Assistant Curator Sanborn gave some time to neotropical bats and the literature pertaining to them; Assistant Curator Boulton worked at intervals on certain African finches, flycatchers, and guinea fowl; Assistant Curator Schmidt studied Central American reptiles, especially in their relation to the data gathered during his recent examination of types in European museums; Assistant Curator Weed made some progress in the preparation of a report on the fishes of Aitutaki Island, collected by the Philip M. Chancellor Expedition to the South Pacific; and Assistant Dwight Davis prepared and made preliminary examination of the skeleton of the West African giant frog, a rare species not hitherto studied in detail.



AFRICAN LION

Carl E. Akeley Memorial Hall (Hall 22)

Specimens collected by Mr. and Mrs. Marshall Field. Taxidermy by C. J. Albrecht

ACCESSIONS—ZOOLOGY

From an average of about 14,000 for the previous eight years, accessions of zoological specimens dropped, in 1933, to 5,147, and of these more than one-fourth were obtained through expeditions which terminated prior to 1933. They are distributed by zoological groups as follows: mammals, 332; birds, 512; amphibians and reptiles, 888; fishes, 1,452; insects, 1,953; lower invertebrates, 10. The number obtained by Museum expeditions and local field work is 1,434; by gift, 3,106; by purchase, 5; and by exchange, 602. The gifts come from a large number of donors, and reflect especially the continued interest and cooperation of local naturalists.

Mr. C. Suydam Cutting, of New York, from whom the Museum has previously received much valuable material, presented an interesting collection obtained by Captain F. Kingdon Ward and Lord Cranbrook in northwestern Burma. This comprised 133 mammals and seventy birds. Among the mammals are various species previously unrepresented in the Museum, and among the birds are paratypes of three new forms. A pair of Kuzer's blood pheasant in this collection also is notable. Twenty-two small mammals from the provinces of Kweichow and Kwangsi, China, were presented by the Metropolitan Museum of Natural History, of Nanking, China. Other gifts of mammals are recorded in the List of Accessions (p. 94).

Mr. and Mrs. John P. Kellogg, of Chicago, gave 117 African birdskins collected by themselves in Kenya and Tanganyika. Included are specimens from the little-visited Ngorongoro Crater, which are especially interesting. Other accessions of birds were largely from local sources, and a considerable number were received in fresh condition for preparation as skeletons.

The Walker Museum, of the University of Chicago, presented twenty-six amphibians and reptiles from the Galapagos Islands, supplementing the valuable series from the same islands given in 1932. Mr. P. M. Miles, of St. Louis, Missouri, generously gave a skeleton of the large Komodo Island lizard, an acquisition which will greatly facilitate a study of this interesting animal. A further much appreciated gift of amphibians and reptiles consists of 158 specimens from Chile, received from Mr. Dillman S. Bullock, of Angol, Chile.

The John G. Shedd Aquarium has continued its cooperation with Field Museum by presenting many specimens of fishes from its expeditions and its surplus. A total of 257 fishes, many of them

extremely interesting, were received from this source. Among them were at least ten species new to the Museum and others of much value for its reference collection. Mr. Stewart Springer, director of the Caribbean Biological Laboratories, Biloxi, Mississippi, presented forty-five fishes from the Gulf of Mexico, and through his recommendation another lot of 105 specimens from the same region was received from Mr. John Daily, of Indianapolis, Indiana. Dr. E. Milby Burton, director of the Charleston Museum, Charleston, South Carolina, has sent three lots of pickerel collected by himself in that state as gifts from the Charleston Museum. These have an important bearing on studies which are under way on the distribution and classification of the smaller pickerels of North America. Gifts of brook trout from Mr. Phil G. Zalsman, of Grayling, Michigan, have provided material for exhibits to show the color changes in this species.

The most noteworthy gift of insects was a series of 402 specimens from Mindanao, Philippine Islands, collected and presented by Mr. L. H. Phillips, of Patterson, California. This was of especial interest since it contained a number of attractive and unusually large species hitherto quite unrepresented in the Museum. A further desirable gift of insects consisting of 260 specimens, mainly beetles, was received from Mr. Emil Liljeblad, of Chicago. Mr. Edward Brundage, Jr., of Lake Forest, Illinois, gave 231 insects of various orders found in the United States.

CATALOGUING, INVENTORYING, AND LABELING—ZOOLOGY

Catalogue entries were made for 7,033 zoological specimens. Of these 1,747 were mammals, 1,594 birds, 1,110 reptiles and amphibians, and 2,582 fishes. Labels for 3,000 skins of mammals were written and attached. A total of 479 skulls also received numbers and labels. Rearrangement and relabeling of mammals in alcohol was begun, and details connected with the incorporation into the permanent collections of recent large accessions of mammals were carried on at a high rate. The arrangement of the reference collection of birds received much attention, and various segregated collections were organized so as to be at least temporarily accessible. The types of birds, numbering 289, were segregated from the general collection and placed in a special case. The J. Grafton Parker collection of North American birds, which had suffered from exposure to dust before being presented to the Museum several years ago, was thoroughly cleaned and renovated by Mr. Donald Hirsch, who

acted as volunteer assistant in the Division of Birds during the summer months.

Plans were perfected for the increase of storage space for the reference collections of mammals and birds by combining the storage rooms into one, with only an open aisle between the rows of cabinets containing the collections. Removal of walls and remodeling for this purpose were actively under way in December. This will result in improved light and accessibility, as well as an increase of space amounting to nearly 80 per cent. Sixteen steel storage cases for these collections were received early in the year, and in December delivery of twenty-four additional ones was in progress. The usual routine was continued in caring for collections of reptiles, amphibians, and fishes. Of the 1,699 insects prepared for incorporation in the collection, 1,297 were pinned and labeled. Name labels were written for 368 specimens rearranged in new drawers. In continuation of the permanent improvement of the collection, nine drawers of North American beetles, including aquatic species and carrion feeders, were identified and arranged in new containers.

In the Division of Osteology much progress was made in arranging and systematizing the collections. Card indexes were completed for all skeletons of mammals and birds, and so far as possible the material was classified and arranged in systematic order. A survey of the collection of mammal skeletons, now possible for the first time, reveals that eighty-six families, 279 genera, and 360 species are represented by the 536 specimens in the collection. Twelve skeletons of large mammals were cleaned by maceration in the macerating room. About one hundred skeletons of small birds and mammals were cleaned by dermestids in the same room. Miscellaneous skulls of mammals, numbering about 400, were also cleaned. Seven skeletons were mounted, and various others were cleaned and adapted for exhibition use.

As in former years, considerable assistance was received from volunteer workers and students, especially during the summer months. Mr. Donald Hirsch and Miss Jacolyn Fox assisted in the Division of Birds, Mr. Walter Necker in the Division of Reptiles, and Mr. Robert Allen in the Division of Mammals.

Routine work of the Department was greatly advanced through the assistance received in the latter part of the year from workers assigned to the Museum by the Illinois Emergency Relief Commission and the federal Civil Works Service. These men and women performed such work as cataloguing and numbering of

mammal, bird and fish specimens, indexing, cleaning of skulls, and various copying tasks on the typewriter.

Cooperation with other museums through the exchange of loans was carried on at a somewhat higher rate than usual. A total of 2,272 specimens was loaned to other institutions during the year, and 1,699 were borrowed.

INSTALLATIONS AND REARRANGEMENTS—ZOOLOGY

The preparation and installation of new zoological exhibits were continued at scarcely less than the highly productive rate of recent years. Four large habitat groups of mammals were completed and opened to the public. The subjects were the African lion, the gaur or seladang, the manatee, and the orang. A group of bower birds was prepared and placed in Stanley Field Hall. Two cases of mammals were added to systematic exhibits in Hall 15, and six screens of birds, equivalent to three full cases, were added in Hall 21. Large numbers of fishes and certain reptiles were prepared, but most of these were awaiting installation at the close of the year.

The lion group (see Plate XI), occupying a prominent position in Carl E. Akeley Memorial Hall (Hall 22), is one of the results of the trip which Mr. and Mrs. Marshall Field made by air to central Africa in 1930. It includes a large male lion shot by Mr. Field, an equally fine lioness shot by Mrs. Field, and four small kittens. The male stands at attention on a commanding and rocky eminence, the female, with her kittens gathered between her paws, lies peacefully below. The rocky setting faithfully represents the well-known habitat of lions in the Serengetti Plains of Tanganyika. The group is impressive, characteristic of the animals, and notable for the effective simplicity of its composition. It was designed and prepared by Staff Taxidermist C. J. Albrecht.

The great gaur ox of Asia, otherwise known as the seladang, is represented by three animals grouped in a forest setting in William V. Kelley Hall (Hall 17). This species, which is perhaps the finest of all wild oxen, is richly colored and striking in appearance. A large bull is shown emerging from thick forest into a grassy opening where a cow and calf stand at ease in calm, bovine unconcern. Specimens for this group are all from Indo-China, but were received from three sources. The large bull fell to the rifle of Colonel Theodore Roosevelt while leader of the William V. Kelley-Roosevelts Expedition to Eastern Asia for Field Museum in 1928-29. The cow was presented by the late Charles Rydell, of Superior, Wisconsin, and

the young calf was especially collected and presented for the group by Messrs. George F. Ryan and George G. Carey, Jr., of Baltimore. The taxidermy is by Messrs. Julius Friesser and Arthur G. Rueckert of the Museum staff. The background was painted by Staff Artist Charles A. Corwin.

A group of oranges (see Plate X), to some extent a reinstallation, but in actual effect practically a new exhibit, was also given a place in William V. Kelley Hall. The animals for this group were mounted many years ago by the late Carl E. Akeley, but their installation in a square floor case was unsuitable for the Museum's present building. Therefore, the group was completely rearranged and adapted to a new setting in a built-in case with a painted background. This required the construction of an entire tree-top scene in a tropical forest which was very successfully carried out by Staff Taxidermist Leon L. Pray.

A group of the Florida manatee or sea cow provided an important addition to the Hall of Marine Mammals (Hall N). Specimens for this purpose were obtained in fresh, natural condition through the cooperation of the John G. Shedd Aquarium. Two animals are shown in an under-water setting, one in semi-upright and the other in horizontal position. Both are engaged in feeding on water plants. The animals are reproduced in celluloid-like material in which details of skin texture and exact shades of color are perfectly preserved. The group was produced by Staff Taxidermist Leon L. Walters, assisted by Mr. E. G. Laybourne. The background was painted by Mr. Pray.

In the systematic exhibits of mammals in Hall 15, variations and additions were made. A case of dogs and wolves was reinstalled to include most of the important species of the family Canidae except the foxes. Another case was completed, displaying the interesting order of edentate mammals, the sloths, anteaters, aardvark, armadillos, and pangolins. Due to the many valuable accessions from recent expeditions, it was possible to prepare a practically complete series of these animals. The rather difficult taxidermy is mainly by Taxidermist Rueckert assisted by Mr. Frank C. Wonder. A further notable addition in Hall 15 was a single orang installed in its appropriate place among the other manlike apes. This was prepared by Taxidermist Walters, who used the so-called "celluloid" method. It is the first large hairy mammal to be treated in this way and is exceedingly successful. The reproduction was cast from a fresh specimen, and by a somewhat intricate process the skin was replaced

in all naturalness by the celluloid-like composition in which the hair is embedded exactly as it was in the original skin.

To the exhibit of horned and hooved mammals in George M. Pullman Hall (Hall 13) there was added a huge and excellent specimen of American bison bull. The animal, which weighed about 2,300 pounds when alive, had belonged to the herd on the American Ranch at Twodot, Montana, and was presented to the Museum by Colonel Wallis Huidekoper, owner of the ranch. The specimen was mounted by Taxidermist Friesser.

A small habitat group of the fawn-breasted bower bird of New Guinea was prepared by Assistant Taxidermist John W. Moyer and installed in Stanley Field Hall. The birds are shown occupied in their extraordinary courtship display, with the "bower" and complete accessories, which were carefully collected for the purpose by the Cornelius Crane Pacific Expedition of Field Museum (1928-29). Five screens of North American birds were prepared by Staff Taxidermist Ashley Hine and installed in the systematic series in Hall 21. One of these is devoted to herons, ibises, and storks; two others (reinstallations) show rails and shore-birds; and two show small passerine birds, including flycatchers, swallows, jays, creepers, wrens, mockingbirds, and allies. For the foreign series a screen showing the birds of paradise and their relatives was prepared by Mr. Moyer.

Interesting and beautiful celluloid models of two species of angler-fishes and of the peculiar sargassum fish were produced by Taxidermist Rueckert, and placed on exhibition in Albert W. Harris Hall (Hall 18). The specimens used were presented by the John G. Shedd Aquarium which also provided facilities for observing the colors and actions of the species in life. Further fishes in large numbers were completed by Taxidermist Pray, but installation was delayed for the coming year. These are mainly very bright-colored tropical fishes collected by the Crane Pacific Expedition and the Field Museum-Williamson Undersea Expedition to the Bahamas (1929).

Important installations and reinstallations of skeleton exhibits were made in Hall 19, devoted to osteology, by Assistant Curator Edmond N. Gueret and his assistant, Mr. D. Dwight Davis.

THE N. W. HARRIS PUBLIC SCHOOL EXTENSION

At the end of the year the Department of the N. W. Harris Public School Extension had 1,200 traveling exhibition cases of natural history and economic subjects available for loaning to

Chicago's 333 public schools and forty-one branch schools, with an enrollment of 492,670 children. To these schools bi-weekly distribution of two cases each was maintained throughout the scholastic year and, in addition, the University High School of the University of Chicago, thirty-seven parochial and private schools, seven branches of the Y.M.C.A., nine branches of the Chicago Public Library, two Boys' Union League Clubs, and four social settlements were given the same scheduled service. To deliver and collect the 868 cases loaned to these 434 various schools and other institutions, it was necessary for the Museum's two trucks to travel a distance of 9,947 miles.

During the year requests from several organizations were received and granted for the loan of cases. Twelve cases were shown at a session of the annual convention of the American Association of Museums, which was held in the Museum's small lecture hall. Eighteen cases of insects, birds, and wild flowers were loaned to A Century of Progress exposition, where they were exhibited in the Hall of Science. At the request of the superintendent of the United Charities of Chicago, twelve cases were sent to Camp Algonquin. Eighteen cases of birds and reproductions of wild flowers were placed on display in the book section of Marshall Field and Company, and fifteen cases were shown in a special booth at the International Live Stock Show in the Union Stock Yards.

Eight cases, all duplicates, were permanently withdrawn from circulation. Twenty-five new cases were installed, and sixteen others are in process of construction. Two of the new cases prepared by Department Taxidermist A. J. Franzen contain an instructive display of cellulose-acetate reproductions of seven species of salamanders found near Chicago.

The activities of the members of the Department Staff were to a great degree devoted to the repairing of 209 cases. The fact that many of them have been in constant use for a score of years renders it necessary to give a great amount of attention to their maintenance. Forty-three cases were completely reinstalled, some with curved tinted photographic backgrounds and new accessories. This work consumed as much time as the preparation of new cases. The time-curved wax leaves of more than one hundred older exhibits were restored to their original shape by a method devised in the Department. This method was also used in giving to celluloid leaves and flower parts their natural curve and form.

The black labels of 916 cases were replaced with standardized buff labels, and copy was written or revised for 207 subjects. The work of reinforcing the corners of case label frames was completed. To facilitate the delivery of the cases to the schools, all damaged cases are now returned to the laboratories of the Department for necessary repairs. All the cases were inspected, cleaned, and polished during the year.

Hundreds of letters were received from principals, teachers, students, and others, expressing their appreciation of the service rendered by the Department.

THE JAMES NELSON AND ANNA LOUISE RAYMOND FOUNDATION FOR PUBLIC SCHOOL AND CHILDREN'S LECTURES

The James Nelson and Anna Louise Raymond Foundation has again provided lectures and entertainments for children at the Museum and in the schools. While the work in the schools has continued as in the past, the financial situation has greatly curtailed the number of school groups visiting the Museum for the purpose of classwork in the exhibition halls.

ENTERTAINMENTS FOR CHILDREN

Two series of entertainments were offered, one in the spring and the other in the autumn. Both were presented on Saturday mornings in the James Simpson Theatre. The programs given were:

SPRING COURSE

- February 25—Elephants at Work and Play; Behind the Weatherman; The Muskrat and the Fox.
 March 4—A Beaver and His Indian Friend; The Declaration of Independence.*
 March 11—Fathoms Deep; Queen of the Waves; Cotton—From Seed to Cloth.
 March 18—The Coyote Family; From Tree to Newspaper.
 March 25—Porcupines, Bears and Badgers; Buried Sunshine.
 April 1—The Tortoise and His Cousins; The Frontier Woman.*
 April 8—The Rhino Meets an Automobile; A Dyak Wedding; A Trip through Yellowstone Park.
 April 15—Among the Elephant Seals; A Trip to Banana Land; The Garden of the East; A Borneo Venice.
 April 22—A Trip to Penguin Land; Peter Stuyvesant.*
 April 29—From Egg to Butterfly; Flower Friends of Brook and Roadside; Wild Wings.

AUTUMN COURSE

- October 7—Hawaii, the Beautiful; Kilauea, the Volcano; Earthquakes; White-tail, the Deer.
 October 14—Heroes of the Sea; Columbus.*

* Gift to the Museum from the late Mr. Chauncey Keep.

October 21—Animals in Motion; Glimpses of Tibetan Life; Strange Tibetan Dances; Moose—King of the Forest.

October 28—Simba.

November 4—Hunting Dinosaurs; The Romance of Glass.

November 11—The Frog; The Ants' Cow; The Mystery Box; From Dog to Airplane.

November 18—Musk Ox and Polar Bear; The Sky Splitter; Comets and Eclipses.

November 25—A Furry Tale; The Puritans.*

December 2—Through the Year with Animal Friends: Spring; Summer; Autumn; Winter.

* Gift to the Museum from the late Mr. Chauncey Keep.

In addition to the two regular courses of entertainments, three special programs were offered during February and September as follows:

February 11—Lincoln's Birthday Program: My Father; Call to Arms.

February 22—Washington's Birthday Program: Gateway to the West; Shrines of American History.

September 30—Program by Indians from the American Indian Villages at A Century of Progress.

Twenty-two programs in all were offered free to the children of the city and suburbs during the year. The total attendance at these entertainments was 25,950, of which 14,237 came to the spring course, 6,296 to the autumn course, and 5,417 to the special programs.

The following newspapers gave publicity to the programs: *Chicago Daily News*, *Chicago Tribune*, *Chicago Herald and Examiner*, *Chicago Evening American*, and *Chicago Daily Illustrated Times*.

An expression of appreciation for films loaned for the programs is due to the United States Department of Agriculture, the General Electric Company, the Department of the Interior of Canada, the United Fruit Company, the Films of Commerce Corporation, the Philadelphia and Reading Coal and Iron Company, the Michigan Department of Conservation, the Chicago, Milwaukee, St. Paul and Pacific Railway Company, the National Museum of Canada, and the Atlas Educational Film Company. Acknowledgment is due also to the American Indian Villages at A Century of Progress exposition for making possible presentation of the program by Indians on September 30.

MUSEUM STORIES FOR CHILDREN—RAYMOND FOUNDATION

Two series of Museum Stories for Children were written by members of the Raymond Foundation staff. These were published and copies were handed to all in attendance at the entertainments.

A comparison of the following subjects and the films presented at the entertainments will show how they are correlated:

Series XX—Reynard the Fox; Beavers as Engineers; Crabs; Spruce Trees; The American Porcupine; The Secretary Bird; Yellowstone Park; Pollen and Nectar Carriers; Penguins; The Flight of Birds.

Series XXI—Interesting Indian Blankets; The Hawaiian Islands; Why Columbus Sailed West; In the Land of the Tibetans; Gnus; Glass, Natural and Artificial; The Aphids; Musk-Oxen; Kangaroos; Hibernation.

A total of 25,000 copies of *Museum Stories for Children* was distributed during the year.

LECTURE TOURS FOR CHILDREN—RAYMOND FOUNDATION

Classwork in the exhibition halls has been extended to the following groups:

	Number of groups	Attendance
Tours for children of Chicago schools		
Chicago public schools.....	111	4,497
Chicago parochial schools.....	13	659
Chicago private schools.....	13	202
Tours for children of suburban schools		
Suburban public schools.....	92	3,480
Suburban parochial schools.....	5	227
Suburban private schools.....	10	180
Tours for special groups from clubs and other organizations.....	40	2,225

In all, 284 groups were given guide-lecture service and the attendance was 11,470.

In the first week of December, the Museum was host to 788 boys and girls who were in the city as delegates to the Annual Congress of 4H Clubs of the United States. The boys lunched in the cafeteria, and both groups were given special lectures in the halls devoted to animal life, prehistoric plants and animals, and the Hall of the Stone Age of the Old World. That the visit to the Museum was an outstanding feature of the congress has been evidenced by the great number of letters received since the boys and girls returned to their homes.

EXTENSION LECTURES—RAYMOND FOUNDATION

Extension lectures were offered to the schools as in previous years. The following subjects were offered to both high schools and elementary schools and were presented in classrooms and assemblies:

FOR GEOGRAPHY AND HISTORY GROUPS

South America; North American Indians; Glimpses of Chinese Life; Native Life in the Philippines; The Romans; The Egyptians; Migisi, the Indian Lad.

FOR SCIENCE GROUPS

Field Museum and Its Work; Prehistoric Life; Insects and Reptiles; Coal and Iron; Coffee, Chocolate and Tea; A Trip to Banana Land; Food Fishes of the World; Birds of the Chicago Region; Animal Life in the Chicago Region; Trees of the Chicago Region; Wild Flowers of the Chicago Region; Animals at Home; Our Outdoor Friends.

The total number of extension lectures given by the staff of the Raymond Foundation was 423, and the total attendance was 160,750.

NATURE STUDY COURSE—RAYMOND FOUNDATION

At the request of the Chicago Council of Boy Scouts of America, two lectures on natural history topics were arranged for scout-masters. At each lecture a member of the Raymond Foundation staff presented natural history material which would be of assistance to leaders of scout groups. The subjects offered were:

May 13—Wild Flowers and Insects

May 20—Birds of the Chicago Area

RADIO BROADCASTING—RAYMOND FOUNDATION

Radio broadcasts by the Raymond Foundation staff were given in connection with the school radio programs of Station WMAQ as long as the series was offered. From January to the end of the spring semester, fourteen talks were presented to the lower grades in the elementary schools. The talks correlated with the course of nature study being used in those grades.

ACCESSIONS—RAYMOND FOUNDATION

The Raymond Foundation acquired during the year, for use in the Theatre, a number of slides made by the Division of Photography.

The Raymond Foundation was also the beneficiary of the following acquisitions: eight motion picture reels, *Tibetan Dances*, presented to the Museum by Dr. Wilhelm Filchner, of Berlin, Germany; two reels and several hundred feet of extra strips on *India*, presented by Mr. Arthur S. Vernay, of New York; seven reels, *Simba*, presented by The American Museum of Natural History, New York; sixteen reels of film and 148 slides of racial types presented by Miss Malvina Hoffman, of New York; 150 feet of film on *Elephant Seals* purchased from Mr. W. Charles Swett, of Hollywood, California, and 108 slides on Kish presented by Mr. Henry Field, of Chicago.

The film library of Field Museum now contains 164 reels of 35-millimeter film, 26 reels of 16-millimeter film and 27,700 feet of negatives secured by various staff members while on expeditions.

LECTURE TOURS AND MEETINGS FOR ADULTS—RAYMOND FOUNDATION

As in previous years, the services of Museum guide-lecturers were offered, without charge, to clubs, colleges, conventions and other organizations, and to Museum visitors in general. Special tours were offered during the months of July and August for the benefit of visitors to A Century of Progress exposition. Printed monthly tour schedules were placed at the main entrance for the use of visitors, and were distributed also through libraries and other civic centers of the city and suburbs. During the year, 150 general tours and 190 tours covering specific subjects were offered to the public. The adult groups which took advantage of these lecture tours numbered 337, with a total attendance of 11,340 individuals. Besides the regular public tours, special lectures were given to eighty-five groups from colleges, clubs and other organizations, and these were attended by 2,072 persons.

The use of the small lecture hall was extended to Chicago Boy Scout masters for two lectures, to the Izaak Walton League for three meetings, to the Association of American Museums for one meeting, to the American Association for the Advancement of Science for five meetings, and to the Society for Research on Meteorites for three meetings. Total attendance at these meetings was 1,284. Of those who attended, 597 were concerned with children's activities, and 687 with adult activities.

The James Simpson Theatre was used for four meetings of the American Association for the Advancement of Science, attended by 649 persons, and for the graduating exercises of foreign adults who had been studying in the public schools of the city. The attendance at the latter was 682. Total attendance 1,331.

SUMMARY OF ATTENDANCE AT ENTERTAINMENTS, LECTURES,
TOURS, ETC.—RAYMOND FOUNDATION

The total number of groups reached through the activities of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures was 1,156, and the aggregate attendance included in these groups numbered 212,179 individuals.

LECTURES FOR ADULTS

The Museum's fifty-ninth and sixtieth courses of free lectures for the public were given in the James Simpson Theatre on Saturday afternoons during the spring and autumn months. They were

illustrated by motion pictures and stereopticon slides. Following are the programs of both courses:

FIFTY-NINTH FREE LECTURE COURSE

- March 4—What I Have Discovered in the Arctic and Antarctic (by Dog Team, Airplane and Submarine).
Captain Sir Hubert Wilkins, F.R.G.S., New York.
- March 11—Jungle Trails of the Congo.
Colonel Charles Wellington Furlong, F.R.G.S., Cohasset, Massachusetts.
- March 18—Around the Globe in the *Camargo*.
Mr. Amos O. Burg, Portland, Oregon.
- March 25—The Tarahumara Indians—the Cave Dwellers of Northern Mexico.
Mr. Robert M. Zingg, University of Chicago.
- April 1—Land o' Peaks and Sky Blue Waters.
Mr. Fred Payne Clatworthy, Estes Park, Colorado.
- April 8—The Canadian Arctic and Its People.
Mr. Richard Finnie, F.R.G.S., Ottawa, Canada.
- April 15—Hunting Whales.
Mr. Chester Scott Howland, New Bedford, Massachusetts.
- April 22—The Utah Fairyland of Bryce Canyon National Park.
Dr. C. O. Schneider, Chicago.
- April 29—Jungle Gods.
Captain Carl von Hoffman, New York.

SIXTIETH FREE LECTURE COURSE

- October 7—The Desert Road to Turkistan.
Mr. Owen Lattimore, Washington, D.C.
- October 14—Jungle Islands of the South Seas.
Mr. Sidney Shurcliff, Boston, Massachusetts.
- October 21—Meshie, the Child of a Chimpanzee.
Mr. Harry C. Raven, American Museum of Natural History, New York.
- October 28—My Life as an Indian Chief.
Mr. Walter McClintock, Pittsburgh, Pennsylvania.
- November 4—The Spell of Egypt.
Mr. H. C. Ostrander, Jersey City, New Jersey.
- November 11—Republics in the Clouds—Ecuador, Peru, Bolivia.
Major James C. Sawders, Nutley, New Jersey.
- November 18—By Way of Cape Horn.
Mr. Alan J. Villiers, Melbourne, Australia.
- November 25—Amazon Twilight.
Mr. Earl Hanson, Carnegie Institution, Washington, D.C.

The total attendance at these seventeen lectures was 22,202; 11,858 for the spring course, and 10,344 for the autumn course.

A special program for adults, given on May 6, at which *The Maori as He Was*, an official motion picture made under the auspices of the Commonwealth of New Zealand, was shown to 585 persons, brought the total attendance at adult programs to 22,787.

SUMMARY OF ATTENDANCE AT LECTURES, ETC.

The total number of groups receiving instruction or other services from the Museum during the year was 1,188, including an aggregate attendance of 236,984 individuals. These figures include the 1,156

groups and 212,179 individuals reached through the activities of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, as well as the 22,787 persons attending the seventeen lectures and the special motion picture program provided by the Museum for adults, and 2,018 persons attending the various meetings of outside organizations to which the use of the James Simpson Theatre and the small lecture hall was made available.

LIBRARY

In common with other libraries, the Museum's Library has felt the effects of the general economic depression in two ways. Necessarily, purchases of books have been restricted, and the periodical list has been cut. On the other hand, the Library's service to the public has increased. Many persons out of employment have been using their unoccupied time for studies, in which they have taken advantage of the facilities offered by libraries in general, including the one in the Museum. In some cases such study has been undertaken with the objective of being better prepared for their work when they resume it; in others, it has been purely cultural study.

The number of readers in the Library has been increasing each year, partly because more people are learning that this Library is for the use of the public in general, and partly because the books supplement those found in other libraries. During the winter and spring many students from universities came to find additional material for papers and theses. During the summer some of the visitors to A Century of Progress exposition took the opportunity to consult books in the Library. The meeting of the American Library Association brought to Chicago librarians from all parts of the country, and also from abroad, many of whom were interested in the Museum Library's work.

A very important and helpful change was made in the Library during the year. For several years past the shelves had been so crowded that it was difficult to keep the books even approximately in order. Early in 1933 additional space was provided, and stacks were erected in it. This made it possible to bring from the ground floor many books which had not been on the shelves since the Museum moved into the present building. Also, other books which had been temporarily in one of the departmental libraries were brought back to the general Library and placed on the shelves. This gave opportunity for a complete rearrangement of the general Library which has added materially to the ease and convenience with

which the books are handled. Following this, the books in the anthropological library were cleaned and completely rearranged, making available much needed additional space.

During the year cataloguing of the archaeological papers collected by Assistant Curator Henry Field, on his archaeological expedition to Europe in 1931, has been completed. This collection includes much material that will be of increasing value in coming years and the cataloguing, involving the writing of some 3,000 cards, adds vastly to its usefulness.

The Library depends for its growth chiefly on its exchanges, and in this year, when purchases were so limited, these have been even more essential than normally. Because they include so much material regarding the work carried on in other institutions they are most welcome additions. Several new exchange agreements were effected and as a result considerable material of value and usefulness has been added to the Library. Some exchanges have also been made with members of the Museum staff whereby many useful books have been obtained.

It was found necessary to curtail seriously the number of periodicals previously received. This drastic cut, and the lack of recent books, has been much felt by members of the scientific staff requiring certain reference material in their work. Several staff members have assisted in relieving this situation by subscribing to some of the periodicals so that there would be no break in the files, and also by presenting many books which were needed.

The Library has been favored by the receipt of other gifts which will add to the working value of the collection. A fund of \$450 contributed in 1932 by the American Friends of China, Chicago, was used in 1933 for the purchase of books to supplement the literature already available on China. The books acquired with this money have been carefully selected with a view to their usefulness. A special bookplate was made for them so that they may always be distinguished as the gift of this society.

The Library was also enriched by the gift from Mrs. Robert E. Ross, Mrs. Joseph H. King, and Mrs. William E. Pratt, all of Chicago, of a copy of *Oriental Ceramic Art*, illustrated by examples from the collection of William Thompson Walters, in Baltimore, Maryland. Mr. Walters, who was art commissioner to the Paris Expositions in 1867 and 1878, and to the Vienna Exposition in 1873, made a remarkable collection of French and Chinese art, which was later increased by his son. The catalogue of this collection, now presented to the

Library, is a rare work, published in 1897, and consists of ten beautifully bound volumes in five portfolios, containing many fine illustrations. The plates, 116 in colors, and more than 400 in black and white, show exquisite workmanship. The text was written by S. W. Bushell. A limited edition of only 500 copies of this work was published, and Field Museum is fortunate in becoming the possessor of this set.

Among other gifts of the year may be mentioned the following: Volumes 9 and 10 of *Obras completas*, presented by Direccion de las obras completas de Ameghino, of Rio de Janeiro, Brazil; *Les peintures rupestres schématiques de la péninsule ibérique*, in two volumes, received from Abbé Henri Breuil, of Paris; *Three Kingdoms of Indo-China*, relating to the William V. Kelley-Roosevelts Expedition to Eastern Asia for Field Museum, and given by the authors, Mr. Harold Coolidge, of Boston, and Colonel Theodore Roosevelt, of New York; *L'homme, races et coutumes*, as well as Volumes 14, 16, and 29 of the *Memoirs* of the Egypt Exploration Fund, and Volume 85 of the publications of the Palaeontographical Society, presented by Mr. Henry Field, of Chicago; Volume 1 of *Natural History of Central Asia*, and current numbers of *The Illustrated London News*, presented by Mr. Stanley Field, President of the Museum; and *Flora Micronesica*, received from Mr. Ryoza Kanehira, of Sukuoka, Japan.

The work of Miss Malvina Hoffman in Chauncey Keep Memorial Hall, devoted to the races of mankind, has been outlined elsewhere in this Report. In connection with her preparatory travels and studies Miss Hoffman necessarily accumulated a number of books dealing with physical anthropology. These have now become the property of the Library and they are a distinct addition to the Library's material on this subject.

During 1933 there were accessioned 1,950 books and pamphlets. To the catalogues there were added 11,175 cards, bringing the total number of catalogue cards written to 422,854. From the John Crerar Library 6,176 cards were received and filed.

To the Library's record books, now occupying seventeen volumes, there were added 1,950 entries, making the total number of entries 84,475.

As in previous years, the Library takes pleasure in acknowledging the courtesy of other libraries in lending books that were needed in work here. Among those that have thus assisted should be mentioned the Library of Congress, Washington, D.C.; John Crerar Library, Chicago; the University of Chicago; the Museum of Com-

parative Zoology of Harvard University, Cambridge, Massachusetts; the Boston Public Library; the American Museum of Natural History, New York; the New York Public Library.

DIVISION OF PRINTING

During the early part of the year the Division of Printing was engaged chiefly in the printing of exhibition labels for the Departments, the total number being 20,804. Miscellaneous work for the year totaled 460,597 impressions. Because of an unusual demand for guides, handbooks, leaflets and post cards, the Division, during the latter part of the year, devoted most of its time to this work.

In the regular Museum publication series eleven new numbers were issued, of which one was anthropological, two geological, seven zoological, and one the *Annual Report of the Director* for 1932. Of these a total of 13,737 copies was printed. The aggregate number of pages of type composition was 576. Two indexes for completed volumes, one botanical and one geological, totaling thirty pages of composition, were issued. Of these 1,621 copies were produced.

A new edition of the *General Guide* to Field Museum's exhibits, two new editions of the *Handbook* of Field Museum, two anthropological leaflets, two geological leaflets, and a reprint of an anthropological leaflet, were issued. These booklets represent a total of 474 pages of composition, and production of them was 32,074 copies.

Following is a list of the various publications:

PUBLICATION SERIES

- 317.—Anthropological Series, Vol. XXII. The Tanala, a Hill Tribe of Madagascar. By Ralph Linton. March 22, 1933. 334 pages, 35 text-figures. Edition 632.
- 318.—Report Series, Vol. IX, No. 2. Annual Report of the Director for the Year 1932. January, 1933. 142 pages, 9 photogravures. Edition 5,905.
- 319.—Zoological Series, Vol. XX, pages 1-8. The South American Mice Referred to *Microryzomys* and *Thallomyscus*. By Wilfred H. Osgood. December 11, 1933. 8 pages. Edition 800.
- 320.—Zoological Series, Vol. XX, pages 9-10. A New Snake from Arabia. By Karl P. Schmidt. December 11, 1933. 2 pages. Edition 800.
- 321.—Zoological Series, Vol. XX, pages 11-14. Two New Rodents from Argentina. By Wilfred H. Osgood. December 11, 1933. 4 pages. Edition 800.
- 322.—Zoological Series, Vol. XX, pages 15-22. New Reptiles and Amphibians from Honduras. By Karl P. Schmidt. December 11, 1933. 8 pages. Edition 800.
- 323.—Zoological Series, Vol. XX, pages 23-28. Bats of the Genera *Anoura* and *Lonchoglossa*. By Colin Campbell Sanborn. December 11, 1933. 6 pages. Edition 800.

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- 324.—Zoological Series, Vol. XX, pages 29–40. Preliminary Account of the Coral Snakes of Central America and Mexico. By Karl P. Schmidt. December 11, 1933. 12 pages. Edition 800.
- 325.—Geological Series, Vol. VI, pages 61–66. Preliminary Description of a New Marsupial Sabertooth from the Pliocene of Argentina. By Elmer S. Riggs. December 11, 1933. 6 pages, 1 text-figure. Edition 800.
- 326.—Zoological Series, Vol. XX, pages 41–66. Notes on Fishes of the Family Hemirhamphidae. By Alfred C. Weed. December 11, 1933. 26 pages. Edition 800.
- 327.—Geological Series, Vol. VI, pages 67–82. A New Devonian Trilobite from Southern Illinois. By Sharat Kumar Roy. 16 pages, 4 text-figures. December 11, 1933. Edition 800.
- Geological Series. Index for Volume IV. December 30, 1933. 14 pages. Edition 800.
- Botanical Series. Index for Volume VII. December 29, 1933. 22 pages. Edition 810.

LEAFLET SERIES

- Anthropology, No. 30.—The Races of Mankind. An Introduction to Chauncey Keep Memorial Hall. By Henry Field, with a preface by Berthold Laufer and an introduction by Sir Arthur Keith. May, 1933. 40 pages, 9 photogravures, 1 plan of hall. Edition 4,005.
- Anthropology, No. 31.—Prehistoric Man. Hall of the Stone Age of the Old World. By Henry Field, with a foreword by Berthold Laufer. July, 1933. 44 pages, 8 photogravures, 1 map, 1 cover plate. Edition 4,079.
- Anthropology, No. 30.—The Races of Mankind (reprint, *see above*). August, 1933. Edition 579.
- Geology, No. 14.—A Forest of the Coal Age. By B. E. Dahlgren. October, 1933. 40 pages, 2 photogravures, 20 halftones, 4 zinc etchings, 1 cover design. Edition 2,519.
- Geology, No. 4.—Meteorites (reprint). By Oliver C. Farrington. December, 1933. 12 pages, 4 photogravures. Edition 2,010.

GUIDE SERIES

- General Guide to Exhibits of Field Museum of Natural History. Sixteenth edition. 1933. 40 pages, 3 zinc etchings, 1 photogravure (cover). Edition 11,835.
- Anthropology Guide, Part II. Archaeology of North America. By Paul S. Martin. June 15, 1933. 122 pages, 8 photogravures, 10 text-figures, 1 map. Edition 1,065.

HANDBOOK SERIES

- Handbook. General information concerning the Museum, its history, building, exhibits, expeditions and activities. Third edition. August, 1933. 68 pages, 8 halftones. Edition 2,912.
- Handbook (*see above*). Fourth edition. September, 1933. Edition 3,070.

DIVISIONS OF PHOTOGRAPHY AND ILLUSTRATION

The total number of negatives, prints, enlargements of photographs, lantern slides, and transparent exhibition labels made by the Division of Photography during the year was 8,956. Of these, 464 photographic prints and ninety lantern slides were for sales on orders placed by the public. The balance were for various uses in Departments and Divisions of the Museum.

In the Division of Photogravure there was produced a total of 521,700 photogravure prints. These were for the illustration

of publications and leaflets, for headings of posters and membership certificates, and for picture post cards.

The Museum Illustrator completed 842 orders for the Museum's Departments and Divisions. Included among these were 204 pen drawings, 29 maps, retouching of 46 photographs, and other miscellaneous tasks.

DIVISION OF PUBLICATIONS

The list of museums, research organizations, scientific societies, and individuals with which Field Museum maintains relations for the exchange of publications was subjected to careful scrutiny in 1933 to eliminate, as a measure of economy, a minority which had nothing to send in return for the scientific literature received from this institution. Notwithstanding these eliminations, the distribution of publications to institutions and individuals remaining on the list, both in this country and abroad, continued on a generous scale. The distribution in the United States and its possessions, and that in foreign countries, are practically equal in number. During the last year 6,723 copies of scientific publications and 1,044 leaflets were sent out on exchange; also, 4,020 copies of the *Annual Report of the Director* for the year 1932 and 1,072 leaflets were sent to Members of Field Museum. Sales for the year totaled 627 scientific publications, 14,809 leaflets, and 14,030 miscellaneous publications and pamphlets.

Sixteen new exchange arrangements, which it is hoped will prove of mutual advantage, were established with domestic and foreign institutions.

The Museum again desires to express its appreciation to the Smithsonian Institution at Washington, D.C., for the courteous cooperation of its exchange bureau in effecting delivery of publications in far-off countries.

For future distribution and sales, 14,847 copies of the various publications issued during 1933 were wrapped in 305 packages and were stored.

Two leaflets published in the summer have proved especially interesting to the public, more than 4,100 copies having been sold in the last six months of the year. They are *The Races of Mankind*, which was issued in connection with the opening of Chauncey Keep Memorial Hall devoted to the living races of mankind, and *Prehistoric Man*, which was published at the time the Hall of the Stone Age of the Old World was opened.

Other leaflets, especially those relating to evolution, prehistory, and ancient civilizations, continued to be "best sellers," both by mail and to Museum visitors. Popularity is indicated also for one published late in the year, *A Forest of the Coal Age*, which relates to the Museum's three-dimensional restoration of a landscape of Carboniferous time.

POST CARDS

The great demand for Museum post cards during A Century of Progress exposition made it necessary to install a third card stand. Like the two installed in 1929, it is so located and constructed as to permit viewing and selecting with ease the cards, leaflets, and publications displayed. The total number of post cards sold was 164,729, an increase of 90,139 over the 1932 sales.

Two new sets of cards were added to the series issued by the Department of Anthropology, one containing thirty-five views of bronzes depicting the races of mankind, and the other ten views of dioramas of prehistoric man. Many requests have been received for both, more than 500 sets of the pictures of the bronzes alone (totaling over 16,000 cards) having been sold during the last six months of 1933.

One of the card sets issued by the Department of Geology in 1929 was revised to include reproductions of all twenty-eight of the mural paintings of prehistoric landscapes, plants, and animals, which are exhibited in Ernest R. Graham Hall (Hall 38). Two sets of eighteen cards each were added to the zoological series, and one set of twelve cards on botanical subjects was issued. Additions to the individual post card assortment include forty-six anthropological subjects, twelve botanical, eleven geological, fourteen zoological, and three general.

DIVISION OF PUBLIC RELATIONS

World-wide publicity, with newspapers and magazines giving unusually extensive space to articles and photographs, was received by the Museum in 1933 as a result of the opening of Chauncey Keep Memorial Hall devoted to the races of mankind, and the Hall of the Stone Age of the Old World. The openings of these halls were signalized also by special programs over the radio networks of the National Broadcasting Company. The halls were productive of much favorable editorial comment as well as news stories. A series of editorials by Mr. Arthur Brisbane, widely known journalist, appeared in affiliated newspapers from coast to coast. The magazine

Fortune, in its October issue, published a notable series of large pictures in colors of the groups in the Hall of the Stone Age together with an article on the subject. *The Illustrated London News* gave a full page to photographs of the bronzes in Chauncey Keep Hall.

General publicity about all activities of the Museum having an interest to the public was maintained through the institution's Division of Public Relations as in preceding years. This has been made effective by the splendid cooperation received from newspapers, news-distributing agencies, magazines and other media of publicity. Those located in Chicago, naturally, have given the most attention to the Museum, but the press of the nation, and of foreign countries, has likewise manifested an intense interest in news of the more important activities of the institution. In addition to publishing several hundred articles and news items sent out from the Museum, some of them accompanied by photographs, editors have assigned members of their staffs to obtain special articles and series of pictures concerning the Museum.

The monthly bulletin, *Field Museum News*, completed its fourth year of publication. It has been distributed to all Members of the Museum promptly at the beginning of each month, and has also been sent as an exchange to various scientific institutions, and to a number of newspapers and magazines which have frequently reprinted or quoted parts of its contents. In publishing the *News* constant endeavor has been made to include in each issue articles and pictures which would be of interest to Members both at the time of receipt, and for preservation in reference files. Indication that this has been accomplished is seen in the many requests received for back numbers.

As in past years various organizations have placed at the disposal of the Museum, without charge, the facilities of their advertising media, and it is fitting here to express appreciation of these favors. Posters announcing the Field Museum lecture courses were again displayed in the spring and autumn at the city and suburban stations of the Illinois Central and the Chicago and North Western Railways. Libraries, schools, department stores, hotels, clubs, and other establishments likewise displayed these posters. Folders descriptive of the Museum were distributed by local and interurban transportation companies of the Chicago region as well as by railroads throughout the country.

At the invitation of Radio Station WGN of the *Chicago Tribune* a series of talks by members of the Museum staff was begun, this

series to continue into 1934. Other radio stations also contributed to the publicity opportunities of the Museum.

In line with the Museum's general economy program it became necessary early in the year to discontinue purchase of press clipping service. However, the Consolidated Press Clipping Bureaus of Chicago, which for years had furnished the service, very generously made an offer, which was accepted, to supply service on a more limited scale without charge.

DIVISION OF MEMBERSHIPS

The number of persons on the Museum's membership lists again shows a decline. This was to be expected, in view of the protracted economic depression, and duplicates the experience of most similar institutions during these times. It is gratifying to be able to report, however, that the decrease in memberships in 1933 was considerably less than the losses which occurred in 1931 and 1932. In 1931 there was a decrease of 702 Members; in 1932 the loss was 819; and, against these figures, the loss in 1933 was only 320. New Members have been enrolled in place of many who resigned.

The institution has continued to enjoy the loyal support of by far the greater proportion of its Members, and to them is extended an expression of appreciation. To those who have been forced to resign due to economic circumstances, appreciation is expressed for their past assistance to the institution, and it is hoped that improved conditions will soon make it possible for them to resume their association with the Museum.

The following tabulation shows the number of names on the rolls in each of the Museum's membership classifications at the end of 1933.

Benefactors.....	18
Honorary Members.....	18
Patrons.....	31
Corresponding Members.....	7
Contributors.....	107
Corporate Members.....	45
Life Members.....	313
Non-Resident Life Members.....	8
Associate Members.....	2,395
Non-Resident Associate Members.....	4
Sustaining Members.....	49
Annual Members.....	1,204
Total Memberships.....	4,199

The names of all persons listed as Members during 1933 will be found elsewhere in this Report.

CAFETERIA

A very accurate count was kept of the number of persons served in the cafeteria, and the total shown at the end of the year was 165,907. This was an increase of 101,773 compared with the number served in 1932, and is attributable to the Museum's record attendance of more than 3,000,000 visitors.

In addition approximately 45,000 were served with refreshments in the special children's room operated in connection with the cafeteria, making the total number served in both rooms more than 210,000.

Eight tables and thirty chairs were added to the cafeteria equipment, and additional steel shelving and an extension of the dish-washing table were provided in the kitchen.

In the pages which follow are submitted the Museum's financial statements, lists of accessions, names of Members, *et cetera*.

STEPHEN C. SIMMS, *Director*

**COMPARATIVE ATTENDANCE STATISTICS
AND DOOR RECEIPTS
FOR YEARS 1932 AND 1933**

	1933	1932
Total attendance.....	3,269,390	1,824,202
Paid attendance.....	212,298	82,607
Free admissions on pay days:		
Students.....	21,901	18,548
School children.....	90,151	86,496
Teachers.....	2,295	2,121
Members.....	1,817	1,560
Admissions on free days:		
Thursdays..... (52)	895,487	(52) 325,164
Saturdays..... (52)	949,543	(53) 546,811
Sundays..... (53)	1,095,898	(52) 760,895
Highest attendance..... (Aug. 24)	65,966	(Sept. 4) 36,629
Lowest attendance..... (Feb. 7)	22	(Dec. 16) 101
Highest paid attendance..... (Sept. 4)	6,363	(July 4) 3,179
Average daily admissions..... (365 days)	8,957	(366 days) 4,984
Average paid admissions..... (208 days)	1,020	(209 days) 395
Number of guides sold.....	8,918	4,512
Number of articles checked.....	64,322	10,755
Number of picture post cards sold.....	164,729	74,590
Sales of publications, leaflets, handbooks, portfolios, and photographs.....	\$6,306.23	\$3,326.51

COMPARATIVE FINANCIAL STATEMENTS FOR YEARS 1932 AND 1933

	1933	1932
Income from Endowment Fund	\$183,042.24	\$188,870.86
Income from funds held under annuity agreements.....	39,134.46	40,242.55
Income from Life Membership Fund	13,346.10	13,616.33
Income from Associate Membership Fund.....	12,753.90	13,973.49
South Park Commissioners.....	125,802.63	112,926.45
Annual and Sustaining Memberships.....	9,859.00	11,395.00
Admissions.....	53,074.50	20,651.75
Sundry receipts.....	21,171.41	15,933.63
Contributions, general purposes	15,991.47	114,000.00
Contributions, special purposes (expended <i>per contra</i>)	145,746.92	108,678.74
Special funds: Part expended this year for purposes created (included <i>per contra</i>) ..	16,396.09	31,526.21
	\$636,318.77	\$671,815.01
Less: Reserve for contractual liabilities.....		76,155.39
		\$595,659.62
Expenditures:		
Collections.....	\$175,767.04	\$127,385.69
Expeditions.....	7,973.96	10,181.43
Furniture, fixtures, etc.....	12,894.68	4,655.42
Plant reproduction.....		5,096.46
Pensions, group insurance	16,136.76	16,479.04
Research fellowship.....		500.00
Departmental expenses.....	38,847.64	54,898.96
General operating expenses	295,342.04	302,080.25
Annuities on contingent gifts	37,138.20	38,822.26
Added to principal of annuity endowments.....	1,996.26	1,420.29
Interest on loans.....	6,049.73	7,465.38
Paid on bank loans.....	51,100.00	28,700.00
	\$643,246.31	\$597,685.18
Remaining excess of expenditures over income and receipts.....	\$ 6,927.54	\$ 2,025.56
Contribution.....		2,025.56
Notes payable January 1.....	\$156,100.00	\$184,800.00
Paid on account.....	51,100.00	28,700.00
Balance payable December 31.....	\$105,000.00	\$156,100.00

THE N. W. HARRIS PUBLIC SCHOOL EXTENSION COMPARATIVE FINANCIAL STATEMENTS FOR YEARS 1932 AND 1933

	1933	1932
Income from Endowment.....	\$17,803.58	\$20,439.36
Operating expenses.....	17,700.60	17,401.63
Balance, December 31.....	\$ 102.98	\$ 3,037.68

*Included in Collections

LIST OF ACCESSIONS

DEPARTMENT OF ANTHROPOLOGY

AYER, EDWARD E., ESTATE OF, Chicago: 9 blankets: 7 Navaho, 1 Mexican, 1 African—Navaho, United States; Mexico; and Kabyle, Berber stock, Algeria (gift).

BECKER, WILLIAM, Chicago: 1 clay tobacco-pipe—Bali, Cameroon (gift).

BLISS, WYLLYS K., Chicago: 1 small loom—Navaho; 1 glazed pottery jar—Santa Clara Indians, New Mexico (gift).

BOULTON, MRS. LAURA C., Chicago: 3 musical instruments, 8 baskets, 2 gourds, 2 axes, 1 mask, 2 ceremonial staffs, 1 ladle, 1 knife and sheath, 1 lot of keys for marimba of Ovimbundu and Vachokue, 2 shields—Angola and Nyasaland (gift).

CHALMERS, WILLIAM J., Chicago: 2 baskets of Hopi and Apache—Arizona (gift).

CHAN, GEORGE M., Chicago: 1 yellow-glazed porcelain vase, 1 stone image—China (gift).

CHANCELLOR, PHILIP M., Santa Barbara, California: 5 shell necklaces, 15 pieces of pottery, 4 baskets, 2 bows, 1 quiver, 3 arrows, 10 musical instruments, 1 dance belt, 3 headdresses, 2 masks, 1 stool, 1 tobacco-pouch, 1 feather ornament—Yaqui tribe, Mexico (gift).

CRANE, MRS. RICHARD T., JR., Chicago: 1 pre-Columbian gold beaker—Highland Indians, Peru (gift).

DEMPSTER, MRS. CHARLES W., Chicago: 1 blue and white porcelain plate, 1 Kaga porcelain ewer, 1 teapot made from a gourd—Japan (gift).

DEVINE, HERBERT J., New York: 1 clay figurine of rhinoceros of Han period—China (gift).

EXNER, PROFESSOR FRANZ F., Northfield, Minnesota: 3 bows, 12 arrows, 1 paddle, 8 pottery vessels—Aparai Indians, Amazon Basin, Brazil (gift).

FIELD, HENRY, Chicago: 25 painted pottery sherds, 1 glass vessel—Niliat, Iraq; 22 objects: Arab household equipment and saddle-bag, Beduin camel bags, 3 small rugs, Druze coffee bag, measure, pestle and mortar—Kish,

Iraq, and Qasr Azraq, Transjordan; 21 chert projectile points resembling Folsom type—Illinois and Indiana (gift).

FIELD, MARSHALL, New York: 29 sculptures of racial types (full-length figures, busts and heads)—various parts of the world (gift).

FIELD, MRS. STANLEY, Chicago: 25 sculptures of racial types (full-length figures, busts and heads)—various parts of the world (gift).

FIELD MUSEUM OF NATURAL HISTORY: Collected by Paul S. Martin (leader, Archaeological Expedition to the Southwest): 25 pottery vessels, 1,700 potsherds, 2 stone axes, 1 ceremonial celt, 5 stone pendants, 10 bone implements, 1 antler head-dress, 20 butts of roof beams, 1 human skeleton, 1 lot of animal bones—Lowry Ruin, Ackmen, Colorado.

Taken by Miss Malvina Hoffman (Expedition to Asia): 16 motion picture reels—Asia.

Transferred from Department of Geology: 1 bolas with two stone balls—Patagonia.

FILCHNER, DR. WILHELM, Berlin-Wilmersdorf, Germany: 8 reels of motion picture films of Tibetan religious dances and pantomimes—Tibet (gift).

GUEST, DR. L. O., Tampa, Florida: 9 small pottery sherds—Seminole camp, near Tampa Bay, Florida (gift).

HALVORSEN, E. E., Coalinga, California: 1 stone mortar—Yokuts, Martan Creek, Fresno County, California (gift).

HILL, PROFESSOR W. C. O., Colombo, Ceylon: 1 negocoll cast of the face of a Vedda—Ceylon (gift).

HOFFMAN, MISS MALVINA, New York: 1 limestone sculpture of a Chinese head—Shanghai, China (gift).

IZZEDDIN, MISS NEJLA, Chicago: 18 pieces of silver and other jewelry of Druze women, 1 pottery lamp—Lebanon, Syria (gift).

KEEP, CHAUNCEY, ESTATE OF, Chicago: 22 sculptures of racial types (full-length figures, busts and heads)—vari-

ous parts of the world; 50 colored transparencies representing various racial types (bequest).

LANE, MRS. WILLS B., Savannah, Georgia: 1 embroidered costume of Quiché Indian (4 pieces)—Chichicastenango, Guatemala (gift).

LAUFER, BERTHOLD, Chicago: 1 lacquered arm-rest of K'ien-lung period (1736-95)—China (gift).

LONGENECKER, CLAUD M., Warsaw, Indiana: 2 prehistoric stone axes and 50 projectile points—Kosciusko County, Indiana (gift).

MCARTHUR, F. F., Oakland, Iowa: 10 specimens of Southwest painted pottery—southwestern Colorado and southeastern Utah (exchange).

MANN, LUDOVIC M., Glasgow, Scotland: about 24 specimens of animal remains, bone and stone implements of the Azilian period—Island of Oransay, Scotland (exchange); 1 Azilian polishing tool, 2 fragments of lignite armlets, 1 flint scraper—Scotland (gift).

MOORE, H. G., Peoria, Illinois: 5 native musical instruments—Africa; Jerusalem; Turkey (gift).

MOORE, MRS. WILLIAM K., New York: 16 metal mirrors, 1 set of bronze plaques for chariot, 2 pairs of bronze ornaments for horse harness, 1 cast-iron frog—Huai River Valley, Anhui Province, China (gift).

MOOREHEAD, WARREN K., Andover, Massachusetts: 12 objects of ochre and stone implements—Red Paint Culture, Maine (exchange).

MUSÉE D'ETHNOGRAPHIE, Paris, France: 1 musical instrument, 1 lock—Bambara; 1 wax doll—Kasonké; 1 painted stone—Dogo Pinari, Sudan, French West Africa (exchange).

NATIONAL MUSEUM, Copenhagen, Denmark: 31 stone implements of the neolithic period—neolithic, Maglemo-

sean, and Campignian, Jutland, Sealand and Isle of Lolland, Denmark (exchange).

ORIENTAL LIBRARY, Tokyo, Japan: Photostat reproduction of painting by Shizuya Fujikake depicting the Mongol invasions of Japan in 1274 and 1281—Japan (gift).

PLUMMER, MISS LUCY D., Chicago: 13 specimens of glazed and painted pottery—Chama Indians, eastern Peru (gift).

POHELSKI, JEROME, Chicago: 1 grooved stone ax—Chicago (gift).

SARGENT, HOMER E., Pasadena, California: 13 rugs, blankets, and garment—Algeria and Tripoli, North Africa; 1 serape—Mexico (gift).

SCHMIDT, KARL P., Chicago: 3 pre-Columbian clay heads—Taiwan, Arak stock, Santo Domingo (gift).

SCHWEPPE, MRS. CHARLES H., Chicago: bronze group, "Unity of Mankind," of three statues of heroic size; and stone head of Rajput woman, stone bust of Chinese woman, black marble head of Abyssinian woman—Jaipur, northwest India; China; Abyssinia (gift).

SIMPSON, MR. and MRS. WILLIAM H., Chicago: 1 silk embroidery, 1 painting in colors on silk—China; 2 painted pottery jars—New Mexico (gift).

TABER, GEORGE H., Pittsburgh, Pennsylvania: 1 incense box of reticulated porcelain—China (gift).

TOWNSEND, F. C., Stratford-on-Avon, England: lot of fragmentary animal bones—gravel pits near Stratford-on-Avon, England (gift).

TULANE UNIVERSITY, DEPARTMENT OF MIDDLE AMERICAN RESEARCH, New Orleans, Louisiana: 48 clay figurines, 3 pottery vessels, 1 stone celt—Tampico, Mexico (exchange).

WALKER, JAMES F., Indianapolis, Indiana: 1 prehistoric rubbing stone—Indiana (gift).

DEPARTMENT OF BOTANY—ACCESSIONS

AELLEN, DR. PAUL, Basel, Switzerland: 8 specimens of plants (exchange).

ALFARO, PROFESSOR ANASTASIO, San José, Costa Rica: 12 specimens of mosses (gift).

AMERICAN INSTITUTE OF BAKING, Chicago: 4 samples of flour (gift).

ANDERSON, DR. EDGAR, Jamaica Plain, Massachusetts: 1 plant specimen—(gift).

ANDREWS, A. H., Estero, Florida: 1 specimen of twigs of Cajuput tree (gift).

ARNOLD ARBORETUM, Jamaica Plain, Massachusetts: 1,187 specimens of plants (exchange); 5 photographs (gift).

ARNOLD, DR. B. G., Bradenton, Florida: 1 specimen of a cultivated plant (gift).

BAILEY, DR. LIBERTY HYDE, Ithaca, New York: 1 plant specimen (gift).

BAKKE, PROFESSOR A. H., Ames, Iowa: 4 specimens of plants (gift).

BENKE, HERMANN C., Chicago: 225 specimens of plants, 1 photographic plate (gift).

BISHOP MUSEUM, BERNICE PAUHI, Honolulu, Hawaii: 154 specimens of Hawaiian plants, 2 samples of taro (exchange).

BLAKE, DR. SIDNEY F., Washington, D.C.: 1 plant specimen (gift).

BOOTH, LAWRENCE M., Balboa Island, California: 6 specimens of plants (gift).

BROADWAY, W. E., Port-of-Spain, Trinidad: 1 plant specimen (gift).

BROOKLYN BOTANIC GARDEN, Brooklyn, New York: 1 specimen of a cultivated plant (exchange).

BURKART, ARTURO, Buenos Aires, Argentina: 36 specimens of plants from Argentina (gift).

CABRERA, PROFESSOR ANGEL, La Plata, Argentina: 100 specimens of plants from Argentina (exchange).

CALDERON, DR. SALVADOR, San Salvador, Salvador: 8 specimens of plants from Salvador (gift).

CALIFORNIA ACADEMY OF SCIENCES, San Francisco, California: 287 herbarium specimens (exchange).

CAPT, MISS LUCILLE, Belton, Texas: 7 specimens of plants from Texas (gift).

CÁRDENAS, PROFESSOR MARTÍN, Potosí, Bolivia: 76 specimens of plants from Bolivia (gift).

CARNEGIE INSTITUTION OF WASHINGTON, DESERT LABORATORY, Tucson, Arizona: 185 specimens of plants from Arizona and Mexico (gift).

CARVALHO, PROFESSOR RUBEN DE SOUZA, São Paulo, Brazil: 20 photographs (gift).

CHAMBERLAIN, PROFESSOR CHARLES J., Chicago: 7 specimens of cycads (gift).

CLARE, SISTER MARY, Brookland, D.C.: 1 plant specimen (gift).

COMPANHIA FORD INDUSTRIAL DO BRASIL, Pará, Brazil: 213 herbarium specimens, 131 wood specimens, 8 plants (gift).

CONSERVATOIRE BOTANIQUE, Geneva, Switzerland: 2,400 specimens of plants (exchange).

CORNELL, MISS MARGARET M., Chicago: 2 specimens of ferns (gift).

CORNELL UNIVERSITY, DEPARTMENT OF BOTANY, Ithaca, New York: 274 specimens of plants from New York (exchange).

CRAFTSMAN WOOD SERVICE COMPANY, INC., Chicago: 2 samples of woods (gift).

CRANE AND COMPANY, INC., Dalton, Massachusetts: 16 samples of paper and paper-making materials (gift).

CUFODONTIS, DR. GIORGIO, Vienna, Austria: 6 specimens of plants (gift).

DAHLGREN, DR. B. E., Chicago: 210 specimens of plants from Brazil, 2 economic specimens (gift).

DEAM, CHARLES C., Bluffton, Indiana: 94 specimens of plants from Indiana (gift).

DICHTER, MIKE, Elburn, Illinois: 1 plant specimen (gift).

DIRECCION GENERAL DE AGRICULTURA, Guatemala City, Guatemala: 6 specimens of plants from Guatemala (gift).

DURHAM, O. C., North Chicago, Illinois: 11 specimens of plants (gift).

ELIAS, REV. BRO., Barranquilla, Colombia: 182 specimens of plants from Colombia (gift).

EMMERSON, N., Chicago: 2 samples of bread (gift).

FAIRBANKS, THOMAS N., COMPANY, New York: specimens of bamboo paper (gift).

FAWCETT, PROFESSOR HOWARD S., Riverside, California: 12 specimens of plants (gift).

FIELD MUSEUM OF NATURAL HISTORY:

Collected by Floyd T. Smith (Marshall Field Zoological Expedition to China): 2 herbarium specimens.

Rockefeller Foundation Fund for Photographing Type Specimens: 4,536 negatives of type specimens of European herbaria, 3,756 photographic prints of type specimens.

Transferred from the Division of Photography: 969 photographic prints.

Purchases: 732 plant specimens from Peru, collected by G. Klug.

FIRESTONE TIRE AND RUBBER COMPANY, Akron, Ohio: 6 sample sheets of rubber, 4 photographs (gift).

FISHER, GEORGE L., Houston, Texas: 82 specimens of plants (gift).

FLORES, DR. ROMÁN S., Progreso, Mexico: 28 specimens of plants (gift).

FRIESCHE BROTHERS, INC., New York: 75 samples of essential oils (gift).

GARFIELD PARK CONSERVATORY, Chicago: 5 herbarium specimens, 1 trunk of palm (gift).

GARRETT, PROFESSOR A. O., Salt Lake City, Utah: 79 specimens of plants from Utah (gift).

GRAY HERBARIUM OF HARVARD UNIVERSITY, Cambridge, Massachusetts: 796 herbarium specimens (exchange).

HAYNIE, MISS NELLIE V., Oak Park, Illinois: 1 specimen of moss (gift).

HOEHNE, DR. F. C., São Paulo, Brazil: 2 specimens of plants (gift).

HOFMANN-OLSEN, T., INC., New Orleans, Louisiana: 2 boards of Cuban mahogany (gift).

HOOD, PROFESSOR J. D., Rochester, New York: 13 specimens of plants from Barro Colorado Island (gift).

HOUSTON MUSEUM OF NATURAL HISTORY, Houston, Texas: 71 specimens of plants from Texas (gift).

HUNGARIAN NATIONAL MUSEUM, Budapest, Hungary: 200 specimens of plants from Hungary (exchange).

INTERNATIONAL MILLING COMPANY, Minneapolis, Minnesota: 1 chart, 2 economic specimens (gift).

JOHNSON, S. C., AND SON, LTD., Racine, Wisconsin: 4 samples of oils (gift).

KAUFFMANN, EMILIO, Pará, Brazil: 1 trunk of rubber tree (gift).

KERN, PROFESSOR FRANK D., State College, Pennsylvania: 2 plant specimens (gift).

LABORATORIO DE BOTÁNICA, MINISTERIO DE AGRICULTURA, Buenos Aires, Argentina: 52 specimens of plants from Argentina (gift).

LABORATORIO DEL MINISTERIO DE AGRICULTURA, San Salvador, Salvador: 25 specimens of plants from Salvador (gift).

LA FOLLETT, C. M., Salem, Oregon: 4 samples of nuts (gift).

LANKESTER, C. H., Cartago, Costa Rica: 6 specimens of plants, 1 photograph (gift).

LAWRANCE, ALEXANDER E., Bogotá, Colombia: 652 specimens of plants from Colombia (gift).

LUNDELL, CYRUS L., Ann Arbor, Michigan: 60 specimens of plants from Guatemala (gift).

MACBRIDE, J. FRANCIS, Geneva, Switzerland: 1 economic specimen (gift).

MCKESSON-FULLER-MORRISON COMPANY, Chicago: 1 map (gift).

MCLAURIN-JONES COMPANY, Brookfield, Massachusetts: 5 samples of paper (gift).

MARIE-VICTORIN, BRO., Montreal, Canada: 320 specimens of plants from Canada (exchange).

MENGEL COMPANY, THE, Louisville, Kentucky: 1 board of Honduras mahogany (gift).

MEXIA, MRS. YNES, Berkeley, California: 292 specimens of plants from Brazil (gift).

MILWAUKEE PUBLIC MUSEUM, Milwaukee, Wisconsin: 4 photographs (gift).

MINISTERIO DE AGRICULTURA, Guatemala City, Guatemala: 1 plant specimen (gift).

MISSOURI BOTANICAL GARDEN, St. Louis, Missouri: 17 specimens of lichens (exchange).

MONTICELLI, DR. JUAN V., Buenos Aires, Argentina: 2 specimens of plants (gift).

MOORE, H. G., Peoria, Illinois: 3 samples of soap (gift).

MOORE, ROBERT, Bradenton, Florida: 1 plant specimen (gift).

MUELLER, C. H., Cuero, Texas: 474 specimens of plants from Texas and Mexico (gift).

MUSEU NACIONAL, Rio de Janeiro, Brazil: 60 specimens of plants from Brazil (exchange).

MUSEO NACIONAL, San José, Costa Rica: 436 specimens of plants from Costa Rica (gift).

NATURHISTORISCHES MUSEUM, Vienna, Austria: 9 specimens of plants from Costa Rica (exchange).

NATURHISTORISKA RIKSMUSEET, BOTANISKA AFDELNING, Stockholm, Sweden: 460 herbarium specimens (exchange).

NEW YORK BOTANICAL GARDEN, Bronx Park, New York: 104 herbarium specimens, 1,594 photographs of type specimens of plants (exchange).

ORTEGA, JESÚS G., Mazatlán, Mexico: 190 specimens of plants from Mexico (gift).

OSTERHOUT, GEORGE E., Windsor, Colorado: 16 specimens of plants (gift).

PALM OIL COMPANY, Plainfield, New Jersey: 14 samples of palm nuts and oils, 3 photographs (gift).

PARKE, DAVIS AND COMPANY, Detroit, Michigan: 1 economic specimen (gift).

PARK, RICHMOND AND COMPANY, Chicago: 1 mahogany board from Santo Domingo (gift).

PARODI, PROFESSOR LORENZO R., Buenos Aires, Argentina: 49 specimens of plants from Argentina (gift).

PEPOON, DR. HAROLD S., Urbana, Illinois: 2 specimens of plants (gift).

POLISH INSTITUTE FOR COLLABORATION WITH FOREIGN COUNTRIES, Warsaw, Poland: 40 samples of economic materials of Poland (gift).

POMONA COLLEGE, DEPARTMENT OF BOTANY, Claremont, California: 465 specimens of plants from California (exchange).

ROZYNSKI, DR. H. W. VON, Jaumave, Mexico: 348 specimens of plants from Mexico (gift).

RUNYON, ROBERT, Brownsville, Texas: 44 specimens of plants (gift).

SALGUES FOUNDATION OF BRIGNOLES, Brignoles, France: 147 packets of seeds (exchange).

SANTA BARBARA MUSEUM OF NATURAL HISTORY, Santa Barbara, California: 1 plant specimen (gift).

SCHIFF, WILLIAM A., Stann Creek, British Honduras: 314 specimens of plants from British Honduras (gift).

SHERFF, DR. EARL E., Chicago: 324 herbarium specimens (gift).

SMITH, F. W., Guasave, Mexico: 2 specimens of plants (gift).

SMITH AND MCLAURIN, LTD., Milliken Park, Scotland: 3 samples of paper-making materials (gift).

STANFORD UNIVERSITY, DUDLEY HERBARIUM, California: 397 specimens of plants from California (exchange).

STEARNS, W. T., Cambridge, England: 5 specimens of plants (gift).

STEED, W. J., New York: 1 plant specimen (gift).

STORK, PROFESSOR HARVEY E., Northfield, Minnesota: 225 specimens of plants from Costa Rica (gift).

SWANSON, MISS CAROLINE, Chicago: 2 specimens of plants (gift).

TAIHOKEU IMPERIAL UNIVERSITY, Taihoku, Taiwan, Japan: 400 specimens of plants from Formosa (exchange).

TALCOTT, MRS. E. A., Chicago: 1 lignum-vitae ruler (gift).

UNITED STATES DEPARTMENT OF AGRICULTURE, BUREAU OF PLANT INDUSTRY, Washington, D.C.: 2 photographs (gift).

UNITED STATES DEPARTMENT OF THE INTERIOR, AGRICULTURAL EXPERIMENT STATION, St. Croix, Virgin Islands: 1 sample of bay leaves (gift).

UNITED STATES NATIONAL MUSEUM, Washington, D.C.: 594 herbarium specimens (exchange).

UNIVERSITETETS BOTANISKE MUSEUM, Copenhagen, Denmark: 947 herbarium specimens (exchange).

UNIVERSITETETS BOTANISKE MUSEUM, Oslo, Norway: 474 herbarium specimens (exchange).

UNIVERSITY OF CALIFORNIA, DEPARTMENT OF BOTANY, Berkeley, California: 417 specimens of plants (exchange).

UNIVERSITY OF CALIFORNIA AT LOS ANGELES, Los Angeles, California: 137 specimens of plants from Mexico (gift); 192 specimens of plants from California and Mexico (exchange).

UNIVERSITY OF CALIFORNIA, COLLEGE OF AGRICULTURE, DIVISION OF POMOLOG-
GY, Davis, California: 4 specimens of jujubes and almonds (gift).

UNIVERSITY OF FLORIDA, AGRICULTURAL EXPERIMENT STATION, Gainesville, Florida: 50 specimens of pecan nuts (gift).

UNIVERSITY OF MICHIGAN, DEPARTMENT OF BOTANY, Ann Arbor, Michigan:

24 specimens of plants (gift); 1,151 specimens of plants (exchange).

UNIVERSITY OF TEXAS, DEPARTMENT OF BOTANY, Austin, Texas: 216 specimens of plants (gift).

UPHOF, DR. J. C. TH., Winter Park, Florida: 400 specimens of Florida plants (exchange).

VAN CLEEF BROTHERS, Chicago: 13 samples of rubber (gift).

VAUGHAN'S SEED STORE, Chicago: 2 specimens of shrubs (gift).

WAITMAN, JOHN, Redington, Nebraska: 1 root of cottonwood tree (gift).

WILLIAMS, ICHABOD T., AND SONS, New York: 1 board of Peruvian mahogany (gift).

WOOTEN, CAPTAIN H. C., Chicago: 1 specimen of teak from Burma (gift).

WORTHY PAPER COMPANY, West Springfield, Massachusetts: 7 samples of paper (gift).

YALE UNIVERSITY, SCHOOL OF FORESTRY, New Haven, Connecticut: 561 specimens of plants, 1 board of eucalyptus (gift).

ZETEK, JAMES, Balboa, Canal Zone: 73 specimens of plants, 2 photographic prints (gift).

DEPARTMENT OF GEOLOGY—ACCESSIONS

ACKERMAN, C. N., Chicago: skull and one-half skeleton of *Bison americanus*—Antioch, Illinois (gift).

ACKERMANN, FRITZ, Bahia, Brazil: 2 quartz crystals with phantoms—Bahia, Brazil (gift).

AIR REDUCTION SALES COMPANY, Chicago: cabinet of 8 tubes of rare gases of the atmosphere (gift).

AXE, B. E. and FRANCES C., Seattle, Washington: 1 gold nugget—Dawson, Canada (gift).

BLASCHKE, FREDERICK, Cold Spring-on-Hudson, New York: 1 specimen of placer gold ore—Cold Spring-on-Hudson, New York (gift).

BOHN, MRS. BERTHA B., Chicago: 1 specimen of fibrous epsomite—Chicago (gift).

BRADY, L. F., Mesa, Arizona: 1 specimen of quartz sericite—Gun Creek, Arizona (gift).

CAPLAN, ALLAN, Creede, Colorado: 6 specimens of pickeringite and goslarite—Creede, Colorado (exchange).

CHANNEY, DR. RALPH W., Berkeley, California: 125 specimens of fossil plants, 4 specimens of fossil pine cones—California (exchange).

CHISOS MINING COMPANY, Terlingua, Texas: 15 specimens of mercury ore—Terlingua, Texas (gift).

CHRISTOPHER, LOUISE, Chicago: 2 gypsum rosettes—Coteau County, South Dakota (gift).

COLBURN, BURNHAM S., Biltmore, North Carolina: 5 specimens of minerals—North Carolina (gift).

CRYSTAL FLUORSPAR COMPANY, Elizabethtown, Illinois: 2 specimens of fluorite—Elizabethtown, Illinois (gift).

DAVIS, O. L., Elmhurst, Illinois: 1 specimen of oolitic jasper, 1 specimen of agate—south of Cape Flattery, Washington (gift).

DEARDORFF, VERGIL, Silt, Colorado: lower jaw of fossil mammal—Colorado (gift).

DOWLING, O. J., Carlsbad, New Mexico: 3 specimens of sylvite—near Carlsbad, New Mexico (gift).

DRASEK, FRANK VON, Cicero, Illinois: 13 specimens of minerals—Murfreestown, Arkansas; 1 specimen of native lead—Silver City, New Mexico (gift).

EMBREE IRON COMPANY, Chicago: 1 cerussite stalactite—Johnson City, Tennessee (gift).

ERIKSEN, JOHAN, Oslo, Norway: 1 specimen of rhombenporphyry—Oslo, Norway (gift).

FIELD, HENRY, Chicago: skull of camel—Millat, Mesopotamia (gift).

FIELD MUSEUM OF NATURAL HISTORY: Collected by Bryan Patterson and James Quinn (Expedition to Colorado and Nebraska): 2 specimens of peat, 1 specimen of fresh-water chalk, 43 specimens of fossil mammals, 2 specimens of fossil reptiles—western Colorado; 6 specimens of fossil mammals—Ainsworth, Nebraska.

Collected by E. S. Riggs (Marshall Field Paleontological Expedition to Argentina, 1922-25): 110 specimens of wood opal, 1 specimen of rock—Rio Chico, Argentina.

Collected by G. F. Sternberg (Marshall Field Paleontological Expedition to Argentina, 1922-25): 2 specimens of chalcedony, 17 specimens of fossil wood—Rio Chico, Argentina.

Collected by the Fourth Asiatic Expedition of the American Museum of Natural History, New York, and Field Museum of Natural History: lower jaws of shovel-tusked mastodon *Platybelodon*—Mongolia.

Collected by Henry W. Nichols: 3 specimens of marl—Antioch, Illinois.

Collected by Sharat K. Roy: 615 specimens of invertebrate fossils—New York, New Jersey, and Pennsylvania.

Purchases: a slice of the Melrose meteorite—Melrose, New Mexico; 1 individual meteorite—Archie, Missouri.

FLANDERS, F. D., Edinburg, Texas: molar tooth of *Elephas imperator*—near Roma, Texas (gift).

FREDERICK, G. K., Ranger, South Dakota: 2 hematite geodes—Bad Lands, South Dakota (gift).

FRIESSER, JULIUS, Chicago: 1 specimen of stigmara—New River, West Virginia (gift).

GREEN, A. P., FIRE BRICK COMPANY, Mexico, Missouri: 1 specimen of diaspore—Mexico, Missouri (gift).

GREEN, DARSIE A., Norman, Oklahoma: 2 geodes—Pottawotamie County, Oklahoma (gift).

HALVERSON, E. E., Coalinga, California: 11 specimens of fossil wood—west of Coalinga, California; 1 specimen of calcareous tufa—Warthan Creek, California (gift).

HAYDEN LAKE MINING AND MILLING COMPANY, Rathdrum, Idaho: 4 specimens of copper ore—Rathdrum, Idaho (gift).

HEDBURN, PAUL, Westmont, Illinois: 7 fossil leaves—Mazon Creek, Illinois (gift).

HERRE, FRED E., Ainsworth, Nebraska: lower jaw of undetermined canid—Ainsworth, Nebraska (gift).

HOUSTON MUSEUM OF NATURAL HISTORY, Houston, Texas: 1 specimen of pink calcite—Texas (gift).

JENNINGS, J. W., Eureka, Arkansas: 2 specimens of jasper, 1 specimen of brecciation in limestone, 1 specimen of tufa, 2 specimens of chalcedony—Eureka Springs, Arkansas (gift).

JONES, A. C., Cicero, Illinois: 2 specimens of wulfenite, 2 specimens of cerussite—Hilltop Mine, Arizona (gift).

KUNZ, G. FREDERICK, New York: 2 fragments of emerald—Colombia (gift).

KYANCUTTA MUSEUM, Kyancutta, Australia: 18 specimens of meteorite and meteorite crater products—Henrybury, Australia (exchange).

LAY, ARTHUR J., Elizabethtown, Illinois: 2 specimens of fluorspar—Crystal Mine, Illinois (gift).

LIPMAN, ROBERT R., Chicago: 1 specimen of native lead—Italian Mountains, Colorado (gift).

MCGEE, WALTER S., Chicago: 1 glacial boulder (gift).

MCINTOSH, F. G., Beverly Hills, California: 3 specimens of barite, 4 specimens of calcareous tufa, 12 specimens of barite crystals—California (exchange).

MCNEILL, E. L., Elkhart, Kansas: 1 fulgurite—Elkhart, Kansas (gift).

MANNEL, CHARLES, Lincoln, Kansas: 1 specimen of *Scaphites*—Blue Hill, Kansas (gift).

MANNING, JAMES, Chicago: 1 specimen of gold ore (black sand), 1 specimen of placer gold ore, 1 specimen of tin ore—Alaska (gift).

MARICOTT, CHARLES, Sault Sainte Marie, Michigan: 14 specimens of claystones—Sault Sainte Marie, Michigan (gift).

MARKHAM, FLOYD, Chicago: 3 specimens of invertebrate fossils—Blue Island, Illinois (gift).

MILLAR, A. O., Murfreesboro, Arkansas: 1 specimen of blue ground breccia matrix of diamond—Pike County, Arkansas (gift).

NELSON, GEORGE, Chicago: 7 specimens of native copper—Keweenaw Point, Michigan (gift).

NEW JERSEY ZINC COMPANY, Franklin Furnace, New Jersey: 9 slabs of partly fabricated zinc (gift).

NININGER, PROFESSOR H. H., Denver, Colorado: 2 photographs of Huizopa meteorite (exchange).

NORTHWESTERN UNIVERSITY, Evanston, Illinois: skeleton of Indian elephant—Sewalik Mountains, India (gift).

NORTHWEST MINING ASSOCIATION, Spokane, Washington: 27 specimens of ores—Washington (gift).

PITTS, WILLIAM B., Sunnyvale, California: 5 specimens of wax opal, 14 specimens of polished agate, 1 mineral—various localities (gift).

POLISH INSTITUTE FOR COLLABORATION WITH FOREIGN COUNTRIES, Warsaw, Poland: 61 specimens of ores and economic minerals—Poland (gift).

PYLE, L. S., Chicago: 1 specimen of *Orthoceras annulatum* in matrix—Riverside, Illinois (gift).

QUINN, JAMES H., Ainsworth, Nebraska: 18 specimens of vertebrate fossils, 1 specimen of fossil reptile—Ainsworth, Nebraska (gift).

QUINN, LESLIE K., Ainsworth, Nebraska: partial skeleton of fossil rodent—Ainsworth, Nebraska (gift).

SALGUES FOUNDATION OF BRIGNOLES, Brignoles, France: 3 specimens of bauxite—Brignoles, France (exchange).

SALIE, PRINCE M. U. M., Galle, Ceylon: 55 gems—Ceylon (gift).

SAROCK, THOMAS, St. James, Missouri: 1 specimen of invertebrate fossil (gift).

SCHETBNER, J. G., Chicago: 1 specimen of stigmara—Franklin County, Illinois (gift).

SEYMOUR, DR. T. F., Mishawaka, Indiana: 4 specimens of free gold in matrix—Ontario, Canada (gift).

STANDARD OIL COMPANY (INDIANA), Chicago: 74 specimens of petroleum products, 60 photographs (gift).

UNITED STATES NATIONAL MUSEUM, Washington, D.C.: etched section of Deport meteorite—Texas; etched section of Santa Fé meteorite—New Mexico; 4 specimens of *Plesippus*—Idaho (exchange).

VARNI, STEPHEN, New York: 5 specimens illustrating stages of cutting a star from crystal (gift).

WALTHER, HERBERT C., Chicago: 1 specimen each of metallic molybdenum, trona and ulexite, halite cube with bubbles, columnar halite (gift).

DEPARTMENT OF ZOOLOGY—ACCESSIONS

ABEGG, KLAUSS, Homewood, Illinois: 4 rodent skins and skulls, 1 white-throated sparrow skin, 2 toads, 1 snake—Isle Royale, Michigan (gift).

ACADEMIA SINICA, Nanking, China: 22 small mammal skins and skulls—China (gift).

ALLEN, G. C., Chicago: 1 white-tailed deer (antlers and skull)—Alabama (gift).

AMERICAN MUSEUM OF NATURAL HISTORY, New York: 9 mouse opossum skins and skulls—South America; 2 bat skins and skulls—Fukien, China (exchange).

ANONYMOUS: 4 bird skeletons—various localities (gift).

ANTUNANO, J. A. SANCHEZ, Merida, Yucatan: 2 bobwhite skins—Yucatan (gift).

ARNETT, C. E., Naperville, Illinois: 1 bird skeleton—Naperville, Illinois (gift).

BAILEY, H. H., Miami, Florida: 4 bat skins and skulls—Balfate, Honduras; 8 bird skins—Honduras and Cuba (exchange).

BAKER, MISS M. B., Chicago: 1 pine grosbeak—Chicago (gift).

BARTLETT, WATSON, Mendota, Illinois: 1 albino ovenbird—Mendota, Illinois (gift).

BEBB, HERBERT, Chicago: 1 beetle—Chicago (gift).

BIRKHOLZ, MRS. HENRY, Laporte, Indiana: 1 long-tailed shrew—Laporte, Indiana (gift).

BIRKS, THOMAS K., Chicago: 1 tiger salamander, 1 lamprey—Okee, Wisconsin (gift).

BISHOP, DR. S. C., Rochester, New York: 1 small boa—Rochester, New York (gift).

BOULTON, RUDYERD, Chicago: 1 West African wood swallow—lower Congo, Africa; 19 bird skins, 35 bird skeletons—Illinois; 65 dragon-flies—Illinois and Wisconsin (gift).

BOWER, H. M., Evanston, Illinois: 4 butterflies—Dickerson County, Michigan (gift).

BRANDER, A. A. DUNBAR, Elgin, Scotland: 1 goosander, 1 corn crake, 1 common snipe, 1 jack snipe—Scotland (gift).

BRUNDAGE, EDWARD, JR., Lake Forest, Illinois: 1 woodchuck skull—Illinois; 45 salamanders, 1 frog, 1 snake, 74 insects—North Carolina; 2 worms, 231 insects—United States (gift).

BUCK, WARREN, Camden, New Jersey: 1 monitor lizard—Sierra Leone (gift).

BULLOCK, DILLMAN S., Angol, Chile: 57 frogs, 87 lizards, 14 snakes—Chile (gift).

BURT, DR. CHARLES E., Winfield, Kansas: 18 frogs, 20 lizards, 15 snakes—various localities (gift).

CALIFORNIA INSTITUTE OF TECHNOLOGY, Pasadena, California: 28 small mammal skins and skulls—Argentina (exchange).

CARNEGIE MUSEUM, Pittsburgh, Pennsylvania: 5 turtles, 15 snakes, 116 lizards—Angola (exchange).

CHARLESTON MUSEUM, Charleston, South Carolina: 34 pickerel, 6 rock sea bass—South Carolina (gift).

CLARK, DAN, Wheeling, Illinois: 1 starling skeleton—Wheeling, Illinois (gift).

CONOVER, BOARDMAN, Chicago: 1 bat skin and skull—Ecuador; 1 pheasant, 1 bobwhite, 7 bird skeletons—Illinois; 2 sun bitterns—Brazil (gift).

CRANDALL, R. H., Athens, Pennsylvania: 1 beetle—North Carolina (exchange).

CUTTING, C. SUYDAM, New York: 133 small mammal skins, 127 skulls, 70 bird skins—Upper Burma (gift).

DAILY, JOHN, Indianapolis, Indiana: 105 fishes—near Biloxi, Mississippi (gift).

DAVIS, D. DWIGHT, Naperville, Illinois: 4 bats, 9 small mammal skeletons—Illinois (exchange); 1 ground squirrel skeleton—Naperville, Illinois; 4 bird skeletons—various localities (gift).

DAVIS, D. DWIGHT, Naperville, Illinois: and NECKER, WALTER L., Chicago, 22 salamanders, 22 frogs, 4 lizards, 18 snakes, 21 turtles—southern Illinois (gift).

DEUTSCHES ENTOMOLOGISCHES INSTITUT, Berlin-Dahlem, Germany: 1 beetle—Council Bluffs, Iowa (exchange).

DICKINSON, J. W., Chicago: 1 spider—Chicago (gift).

DUNCAN, D. K., Globe, Arizona: 2 butterflies—White Mountains, Arizona (gift).

DYBAS, HENRY, Chicago: 4 beetles—Illinois and Indiana (gift).

DYBAS, HENRY, and NEITZEL, WILLIAM, Chicago: 2 newts—Willow Springs, Illinois (gift).

ECKSTROM, MRS. FANNIE H., Brewer, Maine: 1 Hoy's shrew—Holden, Maine (gift).

ELLIOTT, DR. JOHN A., Chicago: 1 hog-nosed snake—Sheridan, Illinois (gift).

EMERSON, DR. ALFRED E., Chicago: 1 western wood frog—Wyoming (gift).

FELIPPONE, DR. FLORENTINO, Montevideo, Uruguay: 4 bats—Uruguay (gift).

FIELD, HENRY, Chicago: 2 rodents, 22 bats, 1 sunbird—Arabia (gift).

FIELD MUSEUM OF NATURAL HISTORY:

Collected by Julius Friesser and Frank C. Wonder (Hancock Expedition to Guadalupe Island): 5 elephant seals, 30 bird skins, 5 bird skeletons—Guadalupe and San Benito Islands; 15 lizards, 2 shells—Lower California, Mexico; 11 bats—Whittier, California.

Collected by Dr. A. W. Herre (Cornelius Crane Pacific Expedition): 980 fishes—various localities.

Collected by John W. Moyer: 11 bird skins—Sparland, Illinois.

Collected by Bryan Patterson (Paleontological Expedition to Colorado, 1933): 17 mammal skeletons, 12 bird skeletons, 4 toads, 8 snakes, 346 insects, 1 scorpion—Mesa County, Colorado.

Collected by Bryan Patterson: 2 pocket gophers—Kankakee County, Illinois.

Collected by Harry S. Swarth: 6 bird skeletons—Illinois.

Purchases: 3 snakes—California; 93 mammal skins and skulls—Ecuador; 2 sage grouse—Wyoming.

FLOTZ, FRANK, Chicago: 1 king rail—Chicago (gift).

FORBIS, HOMER, Albany, Missouri: 5 hair worms—Albany, Missouri (gift).

FRANZEN, ALBERT J., Chicago: 1 pocket gopher skeleton, 4 bird skeletons, 2 salamanders, 4 snakes, 4 house crickets—Illinois (gift).

FRIESSER, JULIUS, Chicago: 1 hog sucker—Kankakee, Illinois; 1 dobson—Yorkville, Illinois (gift).

FULLMER, P. F., Aurora, Illinois: 1 brown thrasher—Aurora, Illinois (gift).

GENERAL BIOLOGICAL SUPPLY HOUSE, Chicago: 2 zone-tailed hawks—Arizona (exchange).

GREEN, MORRIS M., Ardmore, Pennsylvania: 1 giant shrew—Colombo, Ceylon (exchange).

GUERET, EDMOND, Chicago: 1 bird skeleton—Illinois (gift).

HEIM, EDWARD, Wauchula, Florida: 1 moth—Wauchula, Florida (gift).

HERSHKOVITZ, PHILIP, Pittsburgh, Pennsylvania: 1 Texas cave salamander, 3 lizards—Blanco County, Texas (gift).

HICKIN, NORMAN E., Birmingham, England: 181 butterflies and moths—England (gift).

HINE, ASHLEY, Chicago: 1 Arizona crested flycatcher—Arizona; 6 bird skins—various localities (exchange).

IDZKOWSKI, JOSEPH, Chicago: 2 beetles—Chicago (gift).

ILLINOIS STATE NATURAL HISTORY SURVEY, Urbana, Illinois: 31 plant bugs—Illinois (exchange).

JOHNSON, WILLIAM F., Downers Grove, Illinois: 2 flies—Downers Grove, Illinois (gift).

KELLER, JOHN H., Anderson, Indiana: 1 rabbit skull—Madison County, Indiana (gift).

KELLOGG, MR. and MRS. J. P., Lake Forest, Illinois: 117 bird skins—Kenya and Tanganyika, Africa (gift).

KLAUBER, LAURENCE M., San Diego, California: 2 salamanders, 1 frog, 11 lizards, 9 snakes—various localities; 2 lizards—Malpelo Island (exchange).

KRAUTH, EMIL, Hebron, North Dakota: 23 butterflies—South Dakota and Montana (gift).

LAKE, WILLIAM G., Chicago: 2 mole crickets—Winchester, Illinois (gift).

LAWRENCE, TREVILLE, Marietta, Georgia: 1 black vulture skeleton—Marietta, Georgia (gift).

LAYBOURNE, WESLEY LEE, Homewood, Illinois: 1 watersnake—Kankakee River, Illinois (gift).

LIEZOW, MRS. W. W., Chicago: 1 mounted snowy owl—Gascoyne, North Dakota (gift).

LILJEBLAD, EMIL, Chicago: 262 insects—various localities (gift).

LINCOLN PARK COMMISSIONERS, Chicago: 3 bird skeletons—various localities; 1 Malayan tapir (gift).

LIU, C. C., Ithaca, New York: 2 toads—Peiping, China (gift).

MAZURE, ANTON, Chicago: 2 jackrabbits—Wallace, Kansas (gift).

MENGEL, DR. LEVI W., Reading, Pennsylvania: 1 butterfly—Chancho-mayo, Peru (gift).

MILES, P. M., St. Louis, Missouri: 1 Komodo lizard skeleton—East Indies (gift).

MILLER, ALDEN H., Berkeley, California: 6 bird skeletons—Butte County, California (exchange).

MITCHELL-HEDGES, F. A., New York: 1 elephant beetle—Island of Bonacca (gift).

MOONEY, JAMES J., Highland Park, Illinois: 2 mouse skeletons, 2 bird skeletons—Illinois (gift).

MOYER, JOHN W., Chicago: 15 bird skeletons—Illinois (exchange); 1 American osprey—Illinois (gift).

MULLEN, MISS ZENITH, Parsons, Kansas: 1 albino robin—Allen County, Kansas (gift).

MUSEUM OF COMPARATIVE ZOOLOGY, Cambridge, Massachusetts: 2 bats—Philippine Islands; 1 alligator—Florida

(gift); 1 bat skin and skull, 12 bats in alcohol—various localities; 8 frogs, 1 caecilian, 45 lizards, 1 snake, 1 turtle, 1 crocodile—Africa (exchange).

NATURHISTORISCHES MUSEUM, Vienna, Austria: 10 bird skins—eastern Congo, Africa; 76 bird skins—East Africa (exchange).

NECKER, WALTER L., Chicago: 28 frogs and toads, 1 lizard, 8 snakes—Illinois and Wisconsin (exchange).

NEVILLE, RUSSELL T., Kewanee, Illinois: 4 bats, 4 salamanders, 3 frogs, 1 lizard—Missouri (gift).

NORRIS, PROFESSOR H. W., Grinnell, Iowa: 5 shark heads—Biloxi, Mississippi (gift).

OLEN, W. A., and HURLEY, F. D., Clintonville, Wisconsin: 1 spectacled bear—Peru (gift).

PARK, DR. ORLANDO, Champaign, Illinois: 5 insects—various localities (gift).

PETERSEN, MARTIN, Chicago: 1 South American catfish; 2 fishes (gift).

PHILLIPS, L. H., Patterson, California: 430 insects—Mindanao, Philippine Islands (gift).

PIRIE, JOHN T., Chicago: 1 sharp-shinned hawk—Lake Forest (gift).

PLATH, KARL, Chicago: 9 bird skeletons (gift); 4 bird skeletons—various localities (exchange).

PRAY, LEON L., Homewood, Illinois: 1 roach—Homewood, Illinois (gift).

QUANTOCK, THOMAS, Naperville, Illinois: 1 horse skeleton—Naperville, Illinois (gift).

RICHARDS, FLIGHT LIEUTENANT A. R. M., Aden, Arabia: 14 lizards, 1 centipede—Arabia (gift).

RICKS, VICTOR, Santiago, Chile: 5 bird skins—central Chile (exchange).

ROBINSON, JOHN H., Dallas, Texas: 2 lizards, 5 snakes—Sullivan, Missouri; 58 insects—various countries (gift).

ROSS, WILLIAM J., Chicago: 2 beetles—Chicago (gift).

RUECKERT, ARTHUR G., Chicago: 1 long-eared owl skeleton—Chicago; 1 beetle—Tessville, Illinois (gift).

SAIKIN, SAMUEL, Chicago: 1 musk turtle—Round Lake, Illinois (gift).

SANBORN, COLIN C., Highland Park, Illinois: 1 bird skeleton—Illinois (gift).

SCHMIDT, FRANK J. W., Madison, Wisconsin: 3 salamanders, 3 frogs, 12 lizards, 7 snakes, 1 turtle—Wisconsin (gift).

SCHMIDT, KARL P., Homewood, Illinois: 1 bat skeleton, 2 birds—Illinois (gift).

SENCKENBERGISCHES MUSEUM, Frankfurt, Germany: 21 frogs, 48 lizards, 18 snakes—Madagascar (exchange).

SHEDD, JOHN G., AQUARIUM, Chicago: 125 fishes—various localities; 10 fishes—Hawaii and Australia; 116 fishes—various parts of Pacific Ocean; 6 fishes—West Africa; 1 locust lobster—Miami, Florida (gift).

SIMPSON, JAMES, Chicago: 2 mounted capercaillie—Scotland (gift).

SPRANG, W. G., Curtis, Michigan: 2 prairie chickens—Mackinaw County, Michigan (gift).

SPRINGER, STEWART, Biloxi, Mississippi: 48 fishes—Gulf of Mexico (gift).

STRAUSS, LIEUTENANT RALPH, Canal Zone, Panama: 1 mounted toucan—Canal Zone, Panama (gift).

SVIHLA, ARTHUR, Pullman, Washington: 3 mountain beaver skeletons—Washington (exchange).

TEST, FREDERICK H., Lafayette, Indiana: 2 rodent skins and skulls, 12 bats in alcohol—Tela, Honduras (gift).

THEUNE, JUAN, Santiago, Chile: 6 bird skins—Chile (exchange).

THOMPSON, GEORGE, Chicago: 1 siren—Hebron, Indiana (gift).

THOMPSON, COLONEL LEWIS S., Red Bank, New Jersey: 3 batfish—Florida (gift).

TILSKE, MRS. LILLIAN, Chicago: 1 mounted least bittern (gift).

UNITED STATES DEPARTMENT OF AGRICULTURE, Washington, D.C.: 3 bundles of bamboo culms—Savannah, Georgia (gift).

UNIVERSITY OF CHICAGO, Chicago: 4 lizards, 4 turtle shells, 16 land turtle skulls, 2 turtles in alcohol—Galapagos Islands (gift).

UNIVERSITY OF KANSAS, Lawrence, Kansas: 13 horseflies—western United States (exchange).

VAINISI, PHILLIP, Chicago: 1 scorpion—Cuba (gift).

WALKER, CHARLES F., Columbus, Ohio: 4 tree frogs—Sugar Grove, Ohio (gift).

WALTERS, LEON L., Chicago: 1 iguana—Central America (gift).

WEBER, WALTER A., Highland Park, Illinois: 4 bird skeletons—various localities (gift).

WEED, ALFRED C., Chicago: 1 catfish—Mokence, Illinois; 25 ticks—Chicago (gift).

WILEY, MRS. GRACE, Minneapolis, Minnesota: 2 tree frogs (gift).

WILLIAMS, JONATHAN, Evanston, Illinois: 2 snakes—Evanston, Illinois (gift).

WITSCHI, DR. EMIL, Iowa: 1 salamander, 4 toads—various localities (gift).

WOLCOTT, ALBERT B., Downers Grove, Illinois: 173 insects—Illinois and Indiana (gift).

WONDER, FRANK C., Chicago: 1 red bat, 3 bird skeletons—Illinois (gift).

WOOLSEY, RICHARD H., Marseilles, Illinois: 1 beetle—near Marseilles, Illinois (gift).

ZALSMAN, PHIL G., Grayling, Michigan: 4 brook trout—Grayling, Michigan (gift).

RAYMOND FOUNDATION—ACCESSIONS

AMERICAN MUSEUM OF NATURAL HISTORY, New York: seven 35-mm. motion picture reels, *Simba* (gift).

FIELD, HENRY, Chicago: 108 slides on *Kish* (gift).

FIELD MUSEUM OF NATURAL HISTORY: From Division of Photography: 4 slides for Theatre use.

FILCHNER, DR. WILHELM, Berlin-Wilmersdorf, Germany: eight 35-mm. motion picture reels, *Tibetan Dances* (gift).

HOFFMAN, MISS MALVINA, New York: sixteen 16-mm. motion picture reels and 148 slides made on expedition around the world (gift).

SWETT, W. CHARLES, Hollywood, California: 150 feet of 16-mm. motion picture film, *Elephant Seals* (purchase).

VERNAY, ARTHUR S., New York: two 35-mm. motion picture reels and several hundred feet of loose strips on India (gift).

DIVISION OF PHOTOGRAPHY—ACCESSIONS

FIELD, JOSEPH N., II, Chicago: 2 negatives of a model of Natural Bridge, Virginia (gift).

FIELD MUSEUM OF NATURAL HISTORY:
Made by Division of Photography: 6,536 prints, 1,863 negatives, 94 lantern slides, 269 enlargements, and 112 transparent labels.

Developed for expeditions: 82 negatives.

Made by Dr. Paul S. Martin: 108 negatives of Lowry ruin, Colorado.

Made by Bryan Patterson: 30 general views of Colorado.

Purchases: 28 negatives of prehistoric animals of western Europe.

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Western Reserve University, Cleveland, Ohio.

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 Conners, Harry
 Connor, Mrs. Clara A.
 Connor, Frank H.
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 Cook, Mrs. David S., Jr.
 Cook, Mrs. Wallace L.
 Cooke, Charles E.
 Cooke, Miss Flora
 Cooke, Leslie L.
 Coolidge, Miss Alice
 Coolidge, E. Channing
 Coombs, James F.
 Coonley, John Stuart, Jr.
 Coonley, Prentiss L.
 Cooper, Samuel
 Copland, David
 Corbett, Mrs. William J.
 Cormack, Charles V.
 Cornell, John E.
 Cosford, Thomas H.
 Coston, James E.
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 Jennie E.
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 Cox, James A.
 Cox, James C.
 Cox, Mrs. Rensselaer W.
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 Crego, Mrs. Dominica S.
 Crerar, Mrs. John
 Crilly, Edgar
 Cromer, Clarence E.
 Cromwell, Miss Juliette
 Clara
 Cross, Henry H.
 Crowder, Dr. Thomas R.
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 Cudahy, Edward I.
 Culbertson, Dr. Carey
 Cuneo, John F.
 Cunningham, Mrs.
 Howard J.
 Cunningham, John T.
 Curran, Harry R.
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 Jr.
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 Curtis, Miss Frances H.
 Cusack, Harold
 Cushing, John F.
 Cushman, A. W.
 Cutler, Henry E.
 Cutting, Charles S.
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 Dally, Richard
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 Dammann, J. F.
 D'Ancona, Edward N.
 Danforth, Dr. William C.
 Daniels, H. L.
 Dantzig, Leonard P.
 Danz, Charles A.
 Darrow, William W.
 Dashiell, C. R.
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 Davidonis, Dr.
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 Davidson, Miss Mary E.
 Davies, Marshall
 Davis, Abel
 Davis, Arthur
 Davis, Brode B.
 Davis, C. S.
 Davis, Dr. Carl B.
 Davis, Frank S.
 Davis, Fred M.
 Davis, James
 Davis, Dr. Loyal
 Davis, Dr. Nathan S., III
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 Deagan, John C.
 Deahl, Uriah S.
 Decker, Charles O.
 DeCosta, Lewis M.
 DeDardel, Carl O.
 Dee, Thomas J.
 Deery, Thomas A., Jr.
 Degen, David
 DeGolyer, Robert S.
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 Denman, Mrs. Burt J.
 Dennehy, Thomas C.
 Dennis, Charles H.
 Dent, George C.
 Deutsch, Mrs. Percy L.
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 Dewes, Rudolph Peter
 Dewey, Albert B., Sr.
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 Dick, Mrs. Homer T.
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 Dickinson, Robert B.
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 Woodbridge
 Diestel, Mrs. Herman
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 Dillon, Miss Hester May
 Dimick, Miss Elizabeth
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 Dixon, William Warren
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 Dodge, Mrs. Paul C.
 Doering, Otto C.
 Doerr, William P., Sr.
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 Donnelley, Mrs. R. R.
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 Eckhart, Percy B.
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 Eiger, Oscar S.
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Griffith, Melvin L.
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Hand, George W.

- Hanley, Henry L.
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 Harding, Charles F., Jr.
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 Harker, H. L.
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 Harper, Alfred C.
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 Harris, Hayden B.
 Harris, Miss Martha E.
 Hart, Mrs. Herbert L.
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 Hartmann, A. O.
 Hartshorn, Kenneth L.
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 Harvey, Hillman H.
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 Heaton, Herman C.
 Heberlein, Miss
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 Heck, John
 Hedberg, Henry E.
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 Heiman, Marcus
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 Heller, John A.
 Heller, Mrs. Walter E.
 Hellman, George A.
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 Hennings, Mrs.
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 Henry, Huntington B.
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 Herrick, Miss Louise
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 Herron, James C.
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 Higgins, John W.
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 Hillebrecht, Herbert E.
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 Himrod, Mrs. Frank W.
 Hindman, Biscoe
 Hinkle, Ross O.
 Hinman, Mrs. Estelle S.
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 Hinsberg, Stanley K.
 Hinton, E. W.
 Hintz, John C.
 Hird, Frederick H.
 Hirsch, Jacob H.
 Hiscox, Morton
 Histed, J. Roland
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 Hoffmann, Miss Caroline
 Dickinson
 Hoffmann, Edward
 Hempstead
 Hogan, Frank
 Hogan, Robert E.
 Hohman, Dr. E. H.
 Hoier, William V.
 Holden, Edward A.
 Holland, Dr. William E.
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 Hollister, Francis H.
 Holmes, George J.
 Holmes, Miss Harriet F.
 Holmes, Mrs. Maud G.
 Holmes, William
 Holmes, William N.
 Holt, Miss Ellen
 Homan, Miss Blossom L.
 Honnold, Dr. Fred C.
 Honsik, Mrs. James M.
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 Hoover, Mrs. Fred W.
 Hoover, H. Earl
 Hoover, Ray P.
 Hope, Alfred S.
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 Horcher, William W.
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 L., Jr.
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 Horton, Hiram T.
 Horton, Horace B.
 Hosbein, Louis H.
 Hosmer, Philip B.
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 Howard, Harold A.
 Howard, Willis G.
 Howe, Charles Arthur
 Howe, Clinton W.
 Howe, Warren D.
 Howe, William G.
 Howell, Albert S.
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 Howse, Richard
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 Hulbert, Mrs. Milan H.
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 Hunter, Samuel M.

- Hurley, Edward N., Jr.
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 Jacobi, Miss Emily C.
 Jacobs, Hyman A.
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 Jacobs, Louis G.
 Jacobs, Siegfried T.
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 Judah, Noble Brandon
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 Brandon
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 Llewellyn, Paul
 Lloyd, Edward W.
 Lloyd, William Bross
 Lobdell, Mrs. Edwin L.
 Lockwood, W. S.
 Loeb, Mrs. A. H.
 Loeb, Hamilton M.
 Loeb, Jacob M.
 Loeb, Leo A.
 Loesch, Frank J.
 Loewenberg, Israel S.
 Loewenberg, M. L.
 Loewenstein, Sidney
 Loewenthal, Richard J.
 Logan, John I.
 Logan, L. B.
 Long, Mrs. Joseph B.
 Long, William E.
 Lord, Arthur R.
 Lord, Mrs. Russell
 Loucks, Charles O.

Louer, Albert S.
 Love, Chase W.
 Lovell, William H.
 Lovgren, Carl
 Lownik, Dr. Felix J.
 Lucey, Patrick J.
 Ludington, Nelson J.
 Ludolph, Wilbur M.
 Lueder, Arthur C.
 Luehr, Dr. Edward
 Lufkin, Wallace W.
 Luria, Herbert A.
 Lurie, H. J.
 Lustgarten, Samuel
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 Lyford, Harry B.
 Lyford, Will H.
 Lynch, William Joseph
 Lyon, Charles H.
 Lyon, Frank R.
 Lyon, Mrs. Thomas R.

Maass, J. Edward
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 MacCardle, H. B.
 MacDonald, E. K.
 MacDougal, Mrs. T. W.
 Mackey, Frank J.
 Mackinson, Dr. John C.
 MacLeish, Mrs. Andrew
 MacLellan, K. F.
 Magan, Miss Jane A.
 Magill, Henry P.
 Magill, Robert M.
 Magnus, Albert, Jr.
 Magnus, August C.
 Magwire, Mrs. Mary F.
 Maher, Mrs. D. W.
 Main, Walter D.
 Malone, William H.
 Manaster, Harry
 Mandel, Mrs. Aaron W.
 Mandel, Edwin F.
 Mandel, Mrs. Emanuel
 Mandel, Mrs. Frederick L.
 Mandel, Mrs. Robert
 Mandl, Sidney
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 Manley, John A.
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 Mann, John P.
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 Mansure, Edmund L.
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 Marhoefer, Edward H.
 Mark, Mrs. Cyrus
 Marks, Arnold K.
 Marquis, A. N.
 Marsh, A. Fletcher

- Marsh, Mrs. John P.
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 Martin, W. B.
 Martin, Wells
 Marx, Frederick Z.
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 Marzola, Leo A.
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 Massee, B. A.
 Massey, Peter J.
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 Mayer, Oscar F.
 Mayer, Theodore S.
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 McCarthy, Joseph W.
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 Bittinger
 McClun, John M.
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 McCormack, Mrs.
 Alexander A.
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 McCormick, Fowler
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 McCormick, L. Hamilton
 McCormick, Leander J.
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 McMillan, W. B.
 McMillan, William M.
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 Merrill, James S.
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 Meyer, Charles Z.
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 Meyer, Sam R.
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 Pearson, George
 Albert, Jr.
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 Perry, I. Newton
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 Petersen, Jurgen
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 Pierce, Paul, Jr.
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 Pope, Herbert
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 Redington, F. B.
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 Reichmann, Alexander F.
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 Remy, Mrs. William
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Rich, Edward P.
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 Richardson, Guy A.
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 Ricketts, C. Lindsay
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 Julius H.
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 Rietz, Walter H.
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 Rinder, E. W.
 Ring, Miss Mary E.
 Ripstra, J. Henri
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 Roach, Charles H.
 Robbins, Percy A.
 Roberts, Clark T.
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 Roberts, John M.
 Roberts, Dr. S. M.
 Roberts, Mrs. Warren R.
 Roberts, William Munsell
 Robinson, Mrs. Milton E.
 Robson, Mrs. Sarah C.
 Roche, Miss Emily
 Rockwell, Harold H.
 Roderick, Solomon P.
 Rodgers, Dr. David C.
 Rodman, Thomas Clifford
 Roehling, C. E.
 Roehling, Mrs. Otto G.
 Roehm, George R.
 Rogers, Miss Annie T.
 Rogers, Bernard F., Jr.
 Rogers, Dr. Cassius C.
 Rogers, Joseph E.
 Rogerson, Everett E.
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 Roloson, Robert M.
 Romer, Miss Dagmar E.
 Root, John W.
 Rosen, M. R.
 Rosenbaum, Mrs.
 Edwin S.
 Rosenfeld, Mrs. Maurice
 Rosenfield, William M.
 Rosenthal, James
 Rosenthal, Kurt
 Rosenthal, Lessing
 Rosenwald, Richard M.
 Ross, Charles S.
 Ross, Robert C.

Ross, Mrs. Robert E.
 Ross, Thompson
 Ross, Walter S.
 Roth, Aaron
 Roth, Mrs. Margit
 Hochsinger
 Rothacker, Watterson R.
 Rothschild, George
 William
 Rothschild, Maurice L.
 Rothschild, Melville N.
 Routh, George E., Jr.
 Rowe, Edgar C.
 Rozelle, Mrs. Emma
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 Rubens, Mrs. Charles
 Rubovits, Toby
 Ruckelhausen, Mrs.
 Henry
 Rueckheim, F. W.
 Rueckheim, Miss Lillian
 Ruel, John G.
 Rushton, Joseph A.
 Russell, Dr. Joseph W.
 Russell, Paul S.
 Rutledge, George E.
 Ryan, Henry B.
 Ryerson, Donald M.
 Ryerson, Mrs. Edward L.
 Ryerson, Joseph T.

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 Sandidge, Miss Daisy
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 Sardeson, Orville A.
 Sargent, Chester F.
 Sargent, John R. W.
 Sargent, Ralph
 Sauer, William A.
 Sauter, Fred J.
 Sauter, Leonard J.
 Sawyer, Dr. Alvah L.
 Schacht, John H.
 Schaffer, Dr. David N.
 Schaffner, Mrs. Joseph
 Schaffner, Robert C.
 Scheidenhelm, Edward L.
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 Schermerhorn, W. I.
 Scheunemann, Robert G.
 Schlake, William
 Schmidt, Dr. Charles L.
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 Schmitz, Dr. Henry
 Schmitz, Nicholas J.
 Schneider, F. P.
 Schnering, Otto Y.

- Schnur, Ruth A.
 Scholl, Dr. William M.
 Schram, Harry S.
 Schreiner, Sigurd
 Schroeder, Dr. George H.
 Schukraft, William
 Schulman, A. S.
 Schulze, Mrs. Mathilde
 Schulze, William
 Schupp, Philip C.
 Schuyler, Mrs. Daniel J., Jr.
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 Schwartz, Charles K.
 Schwartz, Charles P.
 Schwarz, Herbert E.
 Schwarzhaupt, Emil
 Sclanders, Mrs. Alexander
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 Sears, Richard W., Jr.
 Seaver, Andrew E.
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 Seaverns, Louis C.
 See, Dr. Agnes Chester
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 Seeburg, Justus P.
 Seifert, Mrs. Walter J.
 Seip, Emil G.
 Seipp, Clarence T.
 Seipp, Edwin A.
 Seipp, William C.
 Sello, George W.
 Sencenbaugh, Mrs. G. W.
 Seng, Frank J.
 Seng, J. T.
 Seng, V. J.
 Senne, John A.
 Sennekohl, Mrs. A. C.
 Shaffer, Carroll
 Shaffer, Charles B.
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 Shannon, Angus Roy
 Shapiro, Meyer
 Sharpe, N. M.
 Shaw, Alfred P.
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 Shaw, Theodore A.
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 Shelton, Dr. W. Eugene
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 Sherman, Mrs. Francis C., Sr.
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 Shoan, Nels
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 Shumway, Mrs. Edward DeWitt
 Shumway, P. R.
 Sigman, Leon
 Silander, A. I.
 Silberman, Charles
 Silberman, David B.
 Silberman, Hubert S.
 Silla, Clarence W.
 Silverthorne, George M.
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 Simonek, Dr. B. K.
 Sincere, Benjamin E.
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 Smith, Jens
 Smith, Jesse E.
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 Smith, Walter Byron
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 Smullan, Alexander
 Snow, Edgar M.
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 Socrates, Nicholas
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 Sonnenschein, Hugo
 Sonnenschein, Dr. Robert
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 Soravia, Joseph
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 Stanton, Henry T.
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 Straus, Melvin L.
 Straus, S. J. T.
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 Valentine, Patrick A.
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 VanCleaf, Paul
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 Thomsen-
 VonGlahn, Mrs. August
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 Waller, J. Alexander
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 Webster, Arthur L.
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 Weinstein, Dr. M. L.
 Weinkelbaum, Louis L.
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PUBLICATION 336

REPORT SERIES

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ANNUAL REPORT OF THE DIRECTOR

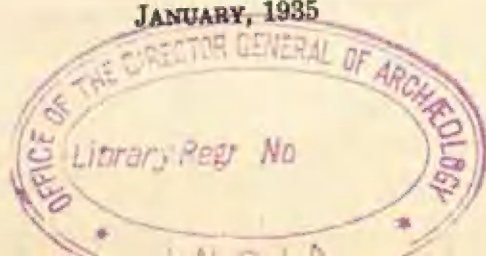
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FOR THE YEAR 1934



CHICAGO, U. S. A.

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EDWARD E. AYER*	1894-1898
HARLOW N. HIGINBOTHAM*	1898-1908

First Vice-Presidents

MARTIN A. RYERSON*	1894-1932
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Second Vice-Presidents

NORMAN B. REAM*	1894-1902
MARSHALL FIELD, JR.*	1902-1905
STANLEY FIELD	1906-1908
WATSON F. BLAIR*	1909-1928
ALBERT A. SPRAGUE	1929-1932

Third Vice-Presidents

ALBERT A. SPRAGUE	1921-1928
JAMES SIMPSON	1929-1932

Secretaries

RALPH METCALF	1894
GEORGE MANIERRE*	1894-1907
FREDERICK J. V. SKIFF*	1907-1921
D. C. DAVIES*	1921-1928

Treasurers

BYRON L. SMITH*	1894-1914
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Directors

FREDERICK J. V. SKIFF*	1893-1921
D. C. DAVIES*	1921-1928

*DECEASED

LIST OF STAFF

STEPHEN C. SIMMS, *Director*

DEPARTMENT OF ANTHROPOLOGY.—Berthold Laufer,* *Curator*; Paul S. Martin, *Acting Curator*; A. L. Kroeber, *Research Associate in American Archaeology*. ASSISTANT CURATORS: Albert B. Lewis, *Melanesian Ethnology*; J. Eric Thompson, *Central and South American Archaeology*; Wilfrid D. Hambly, *African Ethnology*; Henry Field, *Physical Anthropology*; T. George Allen, *Egyptian Archaeology*.

DEPARTMENT OF BOTANY.—B. E. Dahlgren, *Curator*; Paul C. Standley, *Associate Curator of the Herbarium*; J. Francis Macbride, *Assistant Curator of Taxonomy*; Llewelyn Williams, *Assistant Curator of Economic Botany*; Samuel J. Record, *Research Associate in Wood Technology*; A. C. Noé, *Research Associate in Paleobotany*.

DEPARTMENT OF GEOLOGY.—Henry W. Nichols, *Curator*; Elmer S. Riggs, *Associate Curator of Paleontology*; Sharat K. Roy, *Assistant Curator of Geology*; Bryan Patterson, *Assistant in Paleontology*.

DEPARTMENT OF ZOOLOGY.—Wilfred H. Osgood, *Curator*. MAMMALS: Colin C. Sanborn, *Assistant Curator*; Julius Friesser, C. J. Albrecht, A. G. Rueckert, *Taxidermists*. BIRDS: C. E. Hellmayr, *Associate Curator*; Rudyerd Boulton, *Assistant Curator*; Boardman Conover, *Associate*; R. Magoon Barnes, *Assistant Curator of Birds' Eggs*; Ashley Hine, *Taxidermist*. AMPHIBIANS AND REPTILES: Karl P. Schmidt, *Assistant Curator*; Leon L. Walters, *Taxidermist*. FISHES: Alfred C. Weed, *Assistant Curator*; Leon L. Pray, *Taxidermist*. INSECTS: William J. Gerhard, *Associate Curator*; Emil Liljeblad, *Assistant*. OSTEOLOGY: Edmond N. Gueret, *Assistant Curator*; Dwight Davis, *Assistant*. ARTIST: Charles A. Corwin.

N. W. HARRIS PUBLIC SCHOOL EXTENSION.—Stephen C. Simms, *Acting Curator*; A. B. Wolcott, *Assistant Curator*.

JAMES NELSON AND ANNA LOUISE RAYMOND FOUNDATION.—Margaret M. Cornell, *Chief*; Franklin C. Potter, Miriam Wood, *Guide-lecturers*.

LIBRARY.—Emily M. Wilcoxson, *Librarian*; Mary W. Baker, *Assistant Librarian*.

ADMINISTRATION.—Clifford C. Gregg, *Assistant to the Director*; Benjamin Bridge, *Auditor*; Henry F. Ditzel, *Registrar*; Elsie H. Thomas, *Recorder—in charge of publication distribution*; H. B. Harte, *Public Relations*; Pearle Bilinske, *Memberships*; J. L. Jones, *Purchasing Agent*.

PRINTING.—Dewey S. Dill, *in charge*; Lillian A. Ross, *Editor and Proofreader*.

PHOTOGRAPHY AND ILLUSTRATION.—C. H. Carpenter, *Photographer*; Carl F. Gronemann, *Illustrator*; A. A. Miller, *Photogravurist*.

MAINTENANCE.—John E. Glynn, *Superintendent*; W. H. Corning, *Chief Engineer*; W. E. Lake, *Assistant Engineer*.

*DECEASED, 1934

ANNUAL REPORT OF THE DIRECTOR

1934

To the Trustees of Field Museum of Natural History:

I have the honor to present a report of the operations of the Museum for the year ending December 31, 1934.

The preparation of an operating budget for the year 1934, as for the two previous years, was most difficult, for the reason that a further decline in income from endowments, contributions, memberships, and tax collections was anticipated, and likewise a very marked decrease in revenue from paid admissions was expected. Consequently the budget adopted was again substantially reduced, and no expeditions or purchases of collections were provided for except where made possible by contributions for specific new research received during the year.

As anticipated, income from endowments and tax collections was less than in 1933; income from contributions was very much smaller; and, while the downward trend in income from memberships was greatly retarded, there was nevertheless a reduction of receipts from that source. Revenues from admissions and sundry receipts, which in 1933 were far above average, decreased in 1934 as a natural result of the smaller number of visitors, especially those from out of town, to A Century of Progress exposition in its second year. By rigid economies the Museum succeeded in keeping actual expenditures well within budget appropriations and was enabled without further reduction in salaries or personnel to cover its essential operating expenses, and to reduce notes payable caused by previous years' deficits from \$105,000 to \$95,000 (see financial statement, page 237).

Insofar as those activities directly connected with serving the public are concerned, the Museum, despite the severe economies which had to be instituted, managed to maintain its customary standards. The number of visitors received at the Museum was 1,991,469, which, while it represents a large decline from the attendance of 3,269,390 recorded in 1933, was nevertheless the second highest year's attendance in the history of the institution. The decline from the 1933 peak was a natural and expected consequence of the smaller attendance experienced by A Century of Progress.

Taking into consideration extra-mural activities, the Museum's educational influence was carried directly to a total of more than 2,650,000 persons during 1934. This figure includes the visitors

received in the Museum building itself, together with approximately 662,000 persons (chiefly children) reached by the outside work conducted by the institution through the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, and the Department of the N. W. Harris Public School Extension. As always, there were further numbers impossible to calculate, benefiting from the indirect influence of the Museum through the media of its publications and leaflets, *Field Museum News*, and information circulated through newspapers, magazines, radio broadcasts, correspondence, etc.

Only 99,553 persons, or approximately 5 per cent of the total attendance, paid the 25-cent admission fee. All the rest, numbering 1,891,916, either came on Thursdays, Saturdays, and Sundays when admission is free, or belonged to those classifications to whom admission is free on all days—Members of the Museum, children, teachers, students, etc. The highest attendance for a single day occurred on Sunday, September 2, when there were 55,548 visitors.

The extension lecturers sent by the Raymond Foundation addressed 162,360 children at 428 meetings in their school classrooms and assembly halls. The twenty motion picture entertainments presented by the Foundation in the James Simpson Theatre were attended by 27,653 children. The Foundation also conducted 404 guide-lecture tours of the exhibits for children, in which 14,759 young people participated. The total number of persons benefiting from these and other activities of the Raymond Foundation, both inside and outside the building, was 213,579.

Throughout the school year the traveling natural history exhibits circulated by the Department of the N. W. Harris Public School Extension were available in more than 400 schools and certain other institutions daily to approximately 500,000 children. Trucks from the Museum deliver and collect these cases on a regular schedule. This is so arranged that each public school, and numerous private schools, community centers, and other institutions, are provided with cases illustrating two new subjects every two weeks.

During March and April, and October and November, the Museum's annual spring and autumn courses of free illustrated lectures for adults on travel and science were presented on Saturday afternoons in the James Simpson Theatre. In addition, a lecture especially for Members of the Museum was presented on Sunday, November 25. The total attendance at the seventeen lectures was 24,326. Guide-lecture tours provided for groups of adults numbered

370, and the total number of participants in these was 8,807. Large numbers of people were served by the Library of the Museum, and the scientific study collections maintained in the various Departments.

A gratifying testimonial to the value of the traveling exhibits circulated among the schools by the N. W. Harris Public School Extension, and the extension lectures and other benefits provided by the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, was received during the year. This came in the form of a large number of booklets prepared by the seventh and eighth grade pupils of the Mozart Public School, in which the children told in their own words of their appreciation of this Museum extension work. By their essays on various subjects which had been thus presented to them, the children showed that they had absorbed much information as a result of the exhibits and lectures. The booklets were forwarded to the Museum through the cooperation of Miss Myrtle McKellar, Science Teacher, and Miss H. Gertrude Jaynes, Principal of the school.

Dr. Carl Christensen, retired Curator of the Botanical Museum of Copenhagen, was elected a Corresponding Member of the Museum in recognition of his valuable services. Dr. Christensen, one of the world's two foremost authorities on ferns, enabled Field Museum to make photographs of extremely important type specimens of plants, in the course of the work of the Joint Botanical Project of the Rockefeller Foundation and Field Museum, and cooperated in every possible way to promote the success of that project.

Three names were added to the list of Contributors to the Museum:

Mrs. Sarah S. Straus, of New York, was elected a Contributor in appreciation of her generous contribution of funds which made possible the highly successful Straus West African Zoological Expedition of Field Museum. This expedition, which Mrs. Straus herself accompanied for several months, resulted in the acquisition of extremely important additions to the Museum's zoological collections.

Mr. Templeton Crocker, of San Francisco, became a Contributor as a result of his gift to the Museum of a valuable collection of more than 800 ethnological specimens from certain little-known islands of the Melanesian and Polynesian groups. This material was collected by an expedition to the South Pacific, made aboard Mr. Crocker's yacht and under his leadership.

Dr. Berthold Laufer, Curator of the Department of Anthropology, who died September 13, was posthumously elected a Contributor

in recognition of the bequest he made to the Museum of his personal library of some 5,000 volumes, many of them of great rarity and value.

The death of Dr. Laufer removed from the staff of the Museum one of its most distinguished members. In his memory the Board of Trustees, at its meeting held September 17, adopted the following resolution:

"Sorrowfully the Board of Trustees of Field Museum of Natural History has learned of the death, on September 13, 1934, of Dr. Berthold Laufer, for many years a member of the staff of the Department of Anthropology, and, since 1915, Curator of the Department. Dr. Laufer's death removes from the personnel of this institution, and from the roster of the world's scientists, one of the greatest of contemporary scholars.

"An eminent authority on the science of anthropology in general, Dr. Laufer had for many years specialized on researches in Oriental archaeology and ethnology, and had gained world-wide recognition for the unique and important work he achieved in his studies and writings in connection with the yellow race. It is doubtful if any other white man ever penetrated so deeply into the philosophies and the psychology of the peoples of China and Tibet. He understood the Mongolian peoples as few of their own race could, and he humanized our knowledge of them. He was steeped in their literature through all the centuries from their first discovery of means to record their thoughts. He was versed in all their arts—an unerring and incomparable judge of what was genuine and fine among their products, and what was dross. He was a vital influence in bringing about a more widespread appreciation in this country of the creations of Chinese genius, and in establishing a sympathetic understanding of the yellow race.

"In greatest degree to the work of Dr. Laufer does Field Museum owe its fame as a repository of one of the most extensive and valuable of Oriental collections. As leader of the Blackstone Expedition to China and Tibet (1908-10) and the Marshall Field Expedition to China (1923) Dr. Laufer gathered comprehensive collections of the finest treasures of those countries. His profound knowledge enabled him to arrange the display of these in the Museum in the most instructive and interesting manner, with informative labels written in genuine literary style. His contributions to the publications of the Museum were extensive in number and unique in character and scope. In addition, he wrote many other important works which were published elsewhere.

"So familiar was Dr. Laufer with the history of the peoples of the Far East, even in its most obscure chapters, that many things blazoned forth in the present-day world as strictly modern and original accomplishments of the twentieth century and western civilization were to him very old, and but a repetition or development of ideas first born in the minds of men hundreds and sometimes thousands of years ago. In his conversation, and in his voluminous writings, there was always present a delightful charm and an undercurrent of quiet humor as he drew striking parallels from ancient civilizations to show that much contemporary thought, invention and 'progress' was actually not new at all. From his vast store of knowledge he upset, with quaint narratives and facts gleaned from little-known sources, many a set and smug notion of a too self-satisfied generation.

"The loss of Dr. Laufer is keenly felt by the Trustees of the Museum, who recognize not only that a career of splendid intellectual achievements has sadly come to a close, but that a man of noble spirit and character has passed to the beyond.

"Therefore, be it resolved, that this expression of the Trustees' appreciation of Dr. Laufer's many years of loyal and valuable service to the Museum, and to science, be permanently preserved on the records of the Board;

"And be it further resolved that our deep sympathy be conveyed to his bereaved family, and that a copy of this resolution be transmitted to his widow."

News of two other deaths was received with regret during the year. Mr. Louis Charles Watelin, who had for several years been field director of the Field Museum-Oxford University Joint Expedition to Mesopotamia, died in July, while on his way to conduct an expedition on Easter Island. His services during the excavations at Kish were of great value to Field Museum and to the science of archaeology.

Dr. Davidson Black, a Corresponding Member of Field Museum, died on March 16. Dr. Black, a noted anatomist and anthropologist, was professor of anatomy at the Peking Union Medical College in China, and an authority on the "Peking man." He had rendered many valuable services to this institution.

At the Annual Meeting of the Board of Trustees, held January 15, all Officers of the Museum who had served in the preceding year were re-elected for 1934.

At a meeting of the Board held May 21, Mr. Leslie Wheeler and Mr. Joseph N. Field were elected Corporate Members of the Museum; and at a meeting held June 18 they were elected as Trustees. Messrs. Wheeler and Field fill the places on the Board which had been vacant since the deaths in 1932 of Trustees William V. Kelley and Martin A. Ryerson.

It is a pleasure to note that Professor Grafton Elliot Smith, famous British anthropologist, who is a good friend and a Corresponding Member of Field Museum, was knighted in 1934 by His Majesty King George V of England. Sir Grafton has performed many valuable services for Field Museum.

Many new exhibits of importance were completed during 1934. Outstanding among these is the series of sculptures of champion domestic animals of Great Britain, for the exhibition of which a new hall, Hall 12, was especially prepared. These sculptures, of which there are nineteen, are a gift to the Museum from Trustee Marshall Field, and are the work of the noted sculptor, Mr. Herbert Haseltine, who visited the Museum for the purpose of making suggestions as to their installation. The sculptures are in marble and bronze, one-fourth life size. Types of horses, beef and dairy animals, sheep, and swine are included. The collection represents a new departure in the policy of the Museum, as hitherto all exhibits in the Department of Zoology had been limited to wild animals.

A number of new habitat groups of wild animals were added to the zoological exhibits. Especially striking is the group of the rare African antelope known as the bongo, installed in Carl E. Akeley Memorial Hall (Hall 22). This is an animal seldom seen either in museums or by hunters in its homeland. Specimens for this group were collected by the Harold White-John Coats African Expedition (1930) after one of the most difficult hunts in the career of Captain Harold A. White. The group was prepared by Staff Taxidermist C. J. Albrecht, and has a painted background by Staff Artist Charles A. Corwin. In the same hall there was installed also a group of aardvarks, composed of specimens collected by the Harold White-John Coats Abyssinian Expedition (1929), and mounted by Taxidermist Albrecht. Aardvarks are among the world's most peculiar animals, and because of their remarkable speed in burrowing it is difficult to obtain specimens.

In William V. Kelley Hall (Hall 17) four new habitat groups of Asiatic animals were installed. The two most important species of deer in Asia, the sambar deer, and the swamp deer or barasingha,



THE LATE DR. BERTHOLD LAUFER

A member of the staff of Field Museum since 1907, Dr. Laufer was for a number of years Associate Curator of Anthropology, and was Curator of the Department from 1915 until his death on September 13, 1934



are represented by adjacent groups. Both of these are composed of specimens collected by the James Simpson-Roosevelts Asiatic Expedition (1926), and the late Colonel J. C. Faunthorpe of Bombay. Preparation of both groups is the work of Staff Taxidermists Julius Friesser and Arthur G. Rueckert, assisted by Mr. W. E. Eigsti. The backgrounds are by Staff Artist Corwin, and are based on field studies furnished through the cooperation of the Bombay Natural History Society. The third new group in Kelley Hall is that of Bengal tigers, for which the specimens were obtained by the Simpson-Roosevelts Expedition. The tigers were mounted by Taxidermist Albrecht, and the background is by Mr. Corwin. Finally, there was installed in this hall a group of Asiatic sloth bears, for which specimens were collected by Colonel Faunthorpe, and by Mr. Dilipat Singh, of Singahi, Kheri District (Oudh), India. Staff Taxidermist Rueckert and Mr. Eigsti prepared this group, and Mr. Corwin painted the background from field studies furnished by the Bombay Natural History Society.

A notable reinstallation in Kelley Hall is that of the group of proboscis monkeys of Borneo. This group, originally prepared by the late Carl E. Akeley, has been completely rearranged and improved by Staff Taxidermist Leon L. Pray, assisted by Mr. Frank Letl. The group now has a painted background by Mr. Pray, as well as a foreground reproducing a treetop scene with artificial branches, leaves and vines. The animals were purchased for the Museum years ago by the late Martin A. Ryerson.

The installation of four new screens, and the reinstallation of several others, practically completed the systematic collection of North American birds in Hall 21. Nearly all of the work on these was done by Staff Taxidermist Ashley Hine. To the synoptic exhibit of foreign birds in the same hall was added a case of gallinaeous birds prepared by Assistant Taxidermist John W. Moyer.

Of special interest because of the use of the so-called "celluloid method" in its preparation, is a new specimen of the large flightless bird called cassowary, added to the foreign birds in Hall 21. The head and legs of the cassowary were reproduced in cellulose-acetate by the process developed in recent years for work on reptiles and hairless mammals. These are assembled with the original skin of the body. The mount is the work of Staff Taxidermist Leon L. Walters, originator of the celluloid process, and Mr. Edgar G. Laybourne.

The most notable addition to the exhibits of the Department of Anthropology consisted of eleven more sculptures in bronze of racial types, installed in Chauncey Keep Memorial Hall (Hall of the Races of Mankind). These, like the sculptures placed on view in the preceding year, are all the work of Miss Malvina Hoffman, noted sculptor. The new subjects include a full-length figure of a Navaho, and busts or heads of an Alpine Austrian, a Zulu woman, a Korean man, a Pueblo Indian woman, an Apache, a Carib, a Turk, an Igorot, a Berber, and a Toda. These brought the series practically to completion. Only a head of a Beduin remains to be added, and this is expected early in 1935. Altogether the hall now contains ninety studies (including several groups, which bring the number of individuals portrayed up to one hundred) of representative types of the races of the world.

In the east end of Chauncey Keep Hall there was installed a series of exhibits illustrating various phases of physical anthropology. These consist of transparent illuminated colored pictures on glass of racial types, charts pertaining to racial differences and racial distribution, casts of hands and feet illustrating differences among various peoples, skulls of different races, casts of brains, examples of head and body deformation practised by many peoples, samples of hair, casts showing types of ears, and many other exhibits pertaining to the subject.

At the entrance to the Hall of the Stone Age of the Old World (Hall C) there was installed an exhibit called "The Ancestry of Man." On the background of the exhibition case is represented a branching tree. Attached to the branches are reconstructions of the skulls of primitive monkeys and apes, of types of prehistoric men, and finally skulls of modern men of various races. The exhibit graphically illustrates the theory that man, while not the descendant of any living type of ape, has, from many lines of evidence accepted by scientists, a common ancestry with the apes; and that while apes were evolving from primitive types to those living today, a parallel evolution was taking place through various primitive human types and culminating in the present races of man.

Of great interest is an exhibit illustrating the method for determining the building dates of cliff houses and ruins in the southwestern United States by means of tree rings in the remains of wood used in the structures. This has been installed in Hall 7, devoted to archaeology and ethnology of the Southwest. This method of tree-ring chronology was developed by Dr. A. E. Douglass of the Uni-

versity of Arizona, and has been successfully used in connection with the excavations on Lowry ruin in Colorado by the Field Museum Archaeological Expeditions to the Southwest.

Two cases of artifacts, selected from the large collection of ethnological material from the islands of the Pacific, presented to the Museum during the year by Mr. Templeton Crocker, of San Francisco, were placed on exhibition in Joseph N. Field Hall (Hall A).

Seventeen exhibition cases of new ethnological material from Africa were installed in Halls D and E, and two in Alcove A1 near-by. The bulk of these new exhibits is from the collections made by the Frederick H. Rawson-Field Museum Ethnological Expedition to West Africa (1929-30).

In Stanley Field Hall there were installed a case of beautiful scarfs for women, from India; a fine collection of ancient lacquered vessels from Peru; and a case of remarkable Peruvian textiles made between A.D. 1000 and 1500. To the Mexican and Central American collections in Hall 8 there were added many excellent examples of ancient sculptures, pottery, textiles, and other archaeological material including some collected in British Honduras during 1934 by the Joint Expedition of the Carnegie Institution of Washington, D.C., and Field Museum.

Extensive reinstallations, along with additions of material not previously exhibited, were made in Halls 8 and 9 (archaeology of Mexico and Central and South America); Hall 32 (ethnology of China and Tibet); Hall D (West and Central African ethnology); Hall E (Madagascar, and East, South and North Africa); Edward E. and Emma B. Ayer Hall (Hall 2, archaeology of Italy, Etruria and Greece); and Joseph N. Field Hall (Hall A, ethnology of Melanesia and other South Pacific island groups).

Numerous additions were made to the exhibits in the Department of Botany. Among new reproductions of plants, prepared by the Plant Reproduction Laboratories of the Museum, and now on exhibition in the Hall of Plant Life (Hall 29) are one of an entire plant of the Panama hat palm of Central America and northern South America; a branch of the South American climber called guaraná, used by natives in making a beverage with the mildly stimulant properties of coffee; a fruiting branch of the jujube tree; a branch of the tropical American cupuassu tree, which is related to the cacao; a branch of jaboticaba, a curious plant from Brazil which has grape-like fruit growing directly from the stem; and a new species of *Heliconia*, from Mexico, which has been added to the

case containing representatives of the banana family. To the exhibit of foreign nuts forming a part of the exhibit of food plants in Hall 25 there was added a reproduction of a California-grown almond branch in fruit. Other additions to Hall 25 include a case of beverage plants such as coffee, maté, cassine tea, kola, guaraná, and cacao, and a case devoted to fermented and distilled beverages.

A variety of material was added also to the exhibits in Charles F. Millspaugh Hall (Hall 26, North American woods), Hall 27 (foreign woods) and Hall 28 (plant raw materials and products).

Most important new exhibit of the Department of Geology is a collection of culture pearls grown in Japan and presented to the Museum by Mr. Kokichi Mikimoto, of Tokyo, to whose years of experiment and study the commercial production of culture pearls is due. This collection, placed on exhibition in H. N. Higinbotham Hall (Hall 31), includes a group of five culture pearls illustrating range of color and luster; another group of six culture pearls with six natural Oriental pearls for comparison; a pearl oyster with one shell removed to show the mantle in which the pearl grows; a large shell which has a dark mother-of-pearl margin and a light center, with a black pearl on the dark portion and a white one on the light, showing the influence of the shell color on the color of the pearls; and two pearls cut in section, one a natural pearl and one of the culture variety, placed under a magnifying glass to show the nuclei and structure of each kind.

To the meteorite collection in Hall 34, fifteen new specimens representing eleven falls were added. The collection, which is the largest in the world as regards the number of falls represented, now contains specimens of more than two-thirds of all known meteorites, or 727 of the approximately 1,050 of which there is a record.

Fossil skulls of a sabertooth tiger, an Andean horse, and a giant species of turtle were added to the paleontological exhibits in Ernest R. Graham Hall (Hall 38).

Reinstallation to better advantage of the mineral collection in Hall 34 was completed, and great progress was made on exhibits requiring reinstallation in other halls of the Department of Geology.

As in the previous year, for reasons of economy, there were no budget appropriations for expeditions or field work, but a number of privately financed expeditions, organized on behalf of the Museum, were productive of great benefits to the institution.

The Straus West African Expedition of Field Museum, sponsored by Mrs. Sarah S. Straus, of New York, widow of the late Oscar

Straus, made large and valuable collections of zoological material in Senegal, the French Sudan, Nigeria, and Angola (Portuguese West Africa). It was led by Mr. Rudyerd Boulton, Assistant Curator of Birds. Mrs. Straus herself accompanied the expedition during several months of its work. Other members of the party were Mr. John F. Jennings, of Chicago, who was in charge of photography; Mr. Frank C. Wonder of the Museum's taxidermy staff, who collected mammals; and Mrs. Laura C. Boulton, who traveled with the expedition while engaged in ethnological work under a grant from the Carnegie Corporation, of New York. In addition to extensive general zoological collections, material was collected for several proposed habitat groups of birds.

The Leon Mandel Guatemala Expedition of Field Museum, continuing work begun in 1933, made a comprehensive collection of characteristic Central American fauna, and obtained important material for several habitat groups of birds. Mr. Mandel, the sponsor, participated in the work for a part of the time. The leader of the expedition was Mr. Karl P. Schmidt, Assistant Curator of Reptiles. The personnel included Mr. F. J. W. Schmidt, mammalogist; Mr. Emmet R. Blake, ornithologist; and Mr. Daniel Clark, general assistant.

Important new discoveries in connection with the history and culture of the ancient Mayas resulted from the excavations conducted by the Joint Archaeological Expedition of the Carnegie Institution of Washington, D.C., and Field Museum, to British Honduras. The expedition was led by Mr. J. Eric Thompson, Assistant Curator of Central and South American Archaeology. Much valuable material was collected for addition to the Museum's collections relating to the Mayas. The share of the finds assigned to the Belize Estate and Produce Company, owners of the land on which the excavated ruins are located, was purchased for Field Museum by means of a special grant of \$300 generously provided by the Carnegie Institution.

The Field Museum Archaeological Expedition to the Southwest, financed by the Julius and Augusta N. Rosenwald Fund of the Museum, carried on its fourth season of excavations on the Lowry ruin, a prehistoric Indian site in Colorado. As in its previous operations, the expedition was under the leadership of Dr. Paul S. Martin, Assistant Curator of North American Archaeology. The expedition brought back to the Museum a large collection of artifacts and human remains, and many important discoveries were made

regarding the history of the ancient inhabitants of Lowry pueblo. Work was expedited by a force of workmen furnished by the Montezuma County Emergency Relief Administration.

An anthropometric survey of Kurd, Arab, and Beduin populations was made by the Field Museum Anthropological Expedition to the Near East, sponsored by Mr. Marshall Field. The expedition was led by Mr. Henry Field, Assistant Curator of Physical Anthropology, who was accompanied by Mr. Richard A. Martin, of Chicago. In addition to collecting anthropological data and material, the Near East expedition made large collections for the Departments of Botany, Zoology, and Geology.

Paleontological field work was conducted in the Bad Lands of South Dakota by Mr. Elmer S. Riggs, Associate Curator of Paleontology; and in Nebraska and Pennsylvania by Mr. Sharat K. Roy, Assistant Curator of Geology.

The botanical project in Europe, in charge of Mr. J. Francis Macbride, Assistant Curator of Taxonomy, was in its fifth year of operations. This project, inaugurated jointly in 1929 by Field Museum and the Rockefeller Foundation, is still partially supported from the funds granted for the purpose by the latter institution. As a result of its operations some 28,000 photographic negatives of type specimens of plants in European herbaria have now been made, and through Field Museum prints of these are available, at cost of production, to botanists generally in this country and abroad. For the first time since the inception of this project, it was interrupted toward the end of the year by the return of Mr. Macbride to this country for a vacation of several months. It is planned to have him resume work in Europe early in 1935.

Grateful acknowledgment is hereby made to various contributors who have made gifts of funds to the Museum during the year. Among these may be mentioned the following:

Mr. Marshall Field made two gifts totaling \$26,140. One gift was of \$18,640, which was to meet an anticipated deficit of the Museum for 1934. The second gift, \$7,500, was made to defray the expenses of the Field Museum Anthropological Expedition to the Near East.

Mrs. Oscar Straus, of New York, contributed \$11,105.47 for expenses of the Straus West African Expedition of Field Museum.

Mrs. James Nelson Raymond, of Chicago, made gifts totaling \$4,000 toward the operating expenses of the James Nelson and

Anna Louise Raymond Foundation for Public School and Children's Lectures, which she founded in 1925, and to the support of which she has been contributing annually since that time.

Mr. Leslie Wheeler, of Lake Forest, Illinois, contributed \$500 to be devoted to the purchase of desirable bird specimens for addition to the Museum's collections.

Mr. Leon Mandel, of Chicago, gave an additional \$232.43 for expenses of the Leon Mandel Guatemala Expedition of Field Museum, which he originally financed for the Museum with a contribution in 1933 of \$4,351.30.

Mr. Henry J. Patten, of Chicago, is the donor of a total of \$500, one-half of which was for addition to the general operating funds of the Museum. The balance is to cover the cost of publication, in the *Survey of Persian Art*, of certain drawings, made by Mr. Rowland Rathbun, of Sasanian stucco found at Kish by the Field Museum-Oxford University Joint Expedition to Mesopotamia. This publication will be prepared at Oxford under the editorship of Mr. Arthur Upham Pope.

The American Friends of China, Chicago, contributed \$482 for the purchase of material for addition to the Museum's Chinese collections, and for books on China for addition to the Library.

From the Rosenwald Family Association the Museum received two payments totaling \$2,500, representing the interest from October 1, 1933, to October 1, 1934, on the bequest of the late Mrs. Augusta N. Rosenwald.

The will of the late Mrs. Abby K. Babcock provides a legacy of \$100,000, subject to the life interest of her husband, Mr. Frederick R. Babcock, formerly of Chicago.

The South Park Commission, and its successor, the Chicago Park District, turned over to the Museum \$101,226.19, representing the institution's share, as authorized by the state legislature, of collections made during 1934 under the tax levies for 1932 and previous years.

Friends of the Museum have continued, as in past years, to make generous gifts of material for addition to the collections of the various Departments. Some of these have already been noted in preceding pages in connection with their acquisition by expeditions or their installation among the exhibits. Details of the many gifts will be found in the departmental sections of this Report under the heading Accessions, and in the tabulated List of Accessions which

begins on page 238. It is fitting to mention here, however, a few of the gifts of outstanding importance:

Most noteworthy was the gift from Mr. Marshall Field, Trustee of the Museum, of the nineteen sculptures by Herbert Haseltine of champion domestic animals of Great Britain, which have been installed in Hall 12.

An interesting collection of fourteen Lamaist paintings was presented by Messrs. Leon Mandel and Fred L. Mandel, Jr., of Chicago, in memory of their deceased mother, Mrs. Blanche R. Mandel. Mr. Leon Mandel also presented 5,000 feet of motion picture film taken during the Leon Mandel-Field Museum Guatemala Expedition.

The American Friends of China, Chicago, gave the Museum a valuable brush-holder which belonged to the emperor K'ien-lung. It is made of Burmese padouk wood, and has inlaid inscriptions and designs in ivory, jade, and semi-precious stones. It bears the date A.D. 1736. The same society continued its generous contributions of books to the Museum Library.

Mr. William J. Chalmers, of Chicago, presented fifteen specimens of placer gold, of historic interest due to their having been mined during the great California gold rush of 1849.

From Mr. Frank Buck the Museum received gifts of a large king cobra, an East Indian monitor, and two iguanas.

An unusual collection of zinc and lead ores having the appearance of cave deposits, coming from the Embree Mines of Tennessee, was presented by Mr. Seymour Wheeler in the name of his father, the late Mr. Charles P. Wheeler, of Chicago.

From R. Bensabott, Inc., Chicago, there was received a most attractive statuette carved in the semi-precious stone called "tiger-eye" or crocidolite.

The bequest of Dr. Berthold Laufer's personal library of more than 5,000 volumes, to which reference has already been made, is one of the most important Library accessions in years.

A collection of snakes, lizards, frogs and turtles of Yucatan was received from Mr. E. Wyllys Andrews IV, of Chicago, and from Mr. H. St. J. Philby, of Mecca, Arabia, came a collection of 1,281 insects.

From the estate of the late Mr. and Mrs. Edward E. Ayer there was received, as a bequest, a collection of eighteen notable examples of North American Indian blankets. An excellent example of a Chinese mandarin coat was presented by Mrs. Frank S. Johnson, of Pasadena, California, daughter of the late Mr. and Mrs. Ayer.

Mr. Homer E. Sargent, of Pasadena, California, purchased a fine Tunisian blanket for addition to the collections of the Department of Anthropology.

As a result of the cordial relations maintained between the Chicago Zoological Society and Field Museum, the Department of Zoology received a number of specimens of small mammals of unusual interest, as well as five snakes and fifteen lizards, chiefly Australian species. The similar relationship existing between the John G. Shedd Aquarium and this institution brought a number of especially desirable fish specimens which were needed to fill gaps in the Museum collection.

Trustee Leslie Wheeler presented the Museum with its most important bird acquisitions of the year. Altogether his gifts amounted to 303 specimens, including birds of prey, and a collection of 248 miscellaneous birds from southwest Africa.

Dr. A. E. Douglass and Mr. Harry T. Getty, of the University of Arizona, presented material consisting of twenty polished cross sections of wooden beams from southwestern ruins of various dates, and various accessories. These were used in preparing an exhibit illustrating the method of dating ruins, known as "tree ring chronology," of which Dr. Douglass is the originator.

From Mr. Allyn D. Warren, of Chicago, an interesting Balinese carved wooden figure of the god Vishnu riding on a mythical bird, was received.

Mrs. Rudyerd Boulton, of Chicago, presented a collection of twenty-eight west African ethnological objects, principally musical instruments of the natives.

Among distinguished visitors entertained at the Museum during the year were His Highness Sultan Ibrahim of Johore, and the Sultana; Baron and Baroness Maurice de Rothschild, of Paris; Captain H. C. Brocklehurst, former Game Warden of the Sudan, and author of books on African animals; Captain Maurice Rossi and Lieutenant Paul Codos, French aviators who made a trans-Atlantic flight; Sir Henry Wellcome, distinguished scientist, Founder and Director of the Wellcome Historical Medical Museum in London; His Excellency Mr. Hiroshi Saito, Japanese Ambassador to the United States; Mr. Shane Leslie, noted Irish author; Mr. James Zetek, well-known entomologist of the Canal Zone; and Dr. E. P. Phillips, of the National Herbarium, Pretoria, South Africa.

The American Ornithologists' Union held its fifty-second annual meeting in the James Simpson Theatre and the small lecture hall

of Field Museum from October 22 to 25. The sessions, which comprised both technical and general discussions, were attended by nearly 200 leading ornithologists from all parts of the country. This was the second time the Union had held such a meeting at Field Museum, similar sessions having been held here twelve years previously. Members of the staff of Field Museum's Department of Zoology presented several important papers.

The Museum prepared for the visitors a special exhibition in Hall 20 of about one hundred original paintings made by the late Louis Agassiz Fuytes, noted naturalist and artist, during the course of the Field Museum—*Chicago Daily News* Abyssinian Expedition (1926-27). These paintings were received at the Museum several years ago as a gift from Mr. C. Suydam Cutting, of New York, who was also a member of the Abyssinian expedition.

As has been the experience in other years, the holding of the annual International Live Stock Exposition at the Union Stock Yards brought a large additional attendance to Field Museum during the period of the exposition, December 1 to 8. Besides the many persons from out-of-town who visited the Museum independently, two large groups of children were brought to the Museum under the auspices of the Four-H Clubs, an organization promoting the interests of young people on farms. There were a group of 540 girls, and one of 646 boys. They were given special service by the guide-lecturers of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures.

A party of delegates to the annual convention of the Chicago Dental Society spent a morning in the Department of Geology studying the metallurgy of metals used in their profession.

The International Exhibition of Taxidermic Art, sponsored by the technical section of the American Association of Museums, had its Chicago showing in Hall 20 of Field Museum from April 1 to 15. This exhibit, consisting of 473 photographs of animal groups, mounts, sculptures, and material illustrating taxidermic methods, comprised examples of the work of eighty of the world's most highly skilled taxidermists. The staff of Field Museum was well represented among these, the works shown including examples by Staff Taxidermists Julius Friesser, C. J. Albrecht, Leon L. Walters, Leon L. Pray, Ashley Hine, Arthur G. Rueckert; Assistant Taxidermists John W. Moyer and Frank Letl; and Staff Artist Charles A. Corwin.

There were received during the year from Miss Malvina Hoffman, and placed in storage in the Museum, plaster casts of all the sculp-

tures of racial types in Chauncey Keep Memorial Hall (Hall 3). These casts are being stored so that they may be available for filling any orders which may be received from other institutions, or from individuals, for duplicates of any of the sculptures. Some such duplicates have already been sold.

As in 1933, there were loaned to A Century of Progress exposition during its 1934 season twelve of the traveling exhibits of the Department of the N. W. Harris Public School Extension, for display in the Hall of Science. Likewise, from the Department of Zoology there were loaned to the exposition 116 specimens of birds and mammals, and ten fish models, which were used in the biological section of the Hall of Science to illustrate speciation.

The series of radio broadcasts on the Museum and its activities, begun in 1933 at the invitation of WGN, the *Chicago Tribune* station, was continued in the early part of 1934. The Director and Departmental heads of the Museum were the speakers.

The habitat groups of birds in Hall 20 were reproduced as illustrations in a book entitled *The Bird Kingdom*, published by the Orthovis Company, of Chicago, as a companion volume to *The Animal Kingdom*, which appeared in 1933 with pictures of many of the Museum's mammal groups. In these books the pictures are printed by a special process which gives an illusion of three dimensions when they are viewed through an optical device called the "ortho-scope" which accompanies each book. The same publisher issued also four smaller books, for children, illustrated with "three-dimensional" pictures of Field Museum mammal groups.

Among books written by members of the Museum staff and published outside in 1934 is *Homes and Habits of Wild Animals*, by Mr. Karl P. Schmidt, Assistant Curator of Reptiles. This is a companion volume to *Traveling with the Birds*, by Mr. Rudyerd Boulton, Assistant Curator of Birds, published late in 1933. Both books contain attractive colored illustrations by Walter A. Weber, an artist formerly on the staff of the Museum. These books are published by M. A. Donohue and Company, Chicago.

In recognition of the capable and efficient manner in which they have administered their respective Departments, the Board of Trustees at its meeting held September 17, approved the appointment of Acting Curator B. E. Dahlgren as Curator of the Department of Botany, and of Acting Curator Henry W. Nichols as Curator of the Department of Geology. These appointments became effective on October 1.

Dr. Paul S. Martin, formerly Assistant Curator of North American Archaeology, was appointed Acting Curator of the Department of Anthropology shortly after the death of Dr. Berthold Laufer, Curator. Dr. Martin has been on the staff since 1929, and has accomplished much work of importance, both at the Museum and in the field as leader of the Field Museum Archaeological Expeditions to the Southwest.

Dr. Charles Baehni, of the Conservatoire Botanique, Geneva, Switzerland, arrived in Chicago toward the end of July to begin a year of study at Field Museum, under a cooperative arrangement between the two institutions, initiated through the courtesy of Dr. B. P. G. Hochreutiner, director of the conservatory.

Under the provisions of the Field Museum Employees' Pension Fund, insurance amounting to \$6,000 was paid to Mrs. Berthold Laufer, widow of the late Dr. Laufer, whose death has been noted elsewhere in this Report.

Mr. Carl Neuberth, former Custodian of the Herbarium who, after many years of service, was retired in 1932, and pensioned in 1933, because of ill health, died during 1934. Under the provisions of the Field Museum Employees' Pension Fund insurance amounting to \$4,000 was paid to his widow. Also under the provisions of this fund, insurance of \$1,500 was paid to the widow of Mr. Joseph Zobay, carpenter, who died during the year; and \$3,000 insurance was paid to the widow of Mr. William C. Webster, pensioned member of the maintenance force.

Mr. Paul C. Standley, Associate Curator of the Herbarium, was honored during the year by an invitation from the International Botanical Congress to act as Vice-President of the Section for Taxonomy and Nomenclature when the Congress meets at Amsterdam in September, 1935.

Beginning in the last month of 1933, and continuing throughout 1934 on a greatly increased scale, Field Museum has been cooperating with the various relief agencies of the state and federal governments in providing useful employment for large numbers of the persons being assisted by those agencies. As a result, up to the end of 1934, approximately 350 unemployed men and women have had temporary employment for periods of various lengths at this institution. As the "work relief" wages are paid by the relief agencies, the Museum has, without cost except for materials used in the work, derived great benefits from the assignment of these workers. They have been useful in practically every Department and Division of

the Museum. The tasks to which they have been assigned are important ones, but of a character which would have required indefinite postponement if this additional personnel had not been available, because the regular staff of the Museum was fully occupied in still more important work.

The larger part of the relief workers has been assigned to the Museum by the Illinois Emergency Relief Commission, and paid through that agency. Many others, however, were assigned and paid by the Civil Works Service, Civil Works Administration, and Public Works of Art Commission, during the periods in which those federal government agencies were in operation. When the federal agencies were discontinued after the first quarter of 1934, their work was taken over by the state commission, which provided the Museum with assignees throughout the year.

The Museum in 1934 had as many as 86 relief workers assigned to it during a single period; the lowest number at any one time was eight; and the average number through the year was 40. The total number of working hours of the assignees to the Museum, in the aggregate, was 43,172; the average number of working hours per week was 830.

In the Department of Anthropology the work done by relief assignees included the mounting and captioning of some 6,000 photographs; mounting on linen of more than 800 ancient Peruvian fabrics; the washing and numbering of about 9,000 potsherds, and the classifying and mounting of 4,000 of them; and a great amount of typing, indexing, preparing of catalogue cards, and other clerical work.

In the Department of Botany relief workers have made 35,000 packets for plant specimens; mounted approximately 60,000 herbarium specimens of plants; prepared 35,000 index cards; made several thousand leaves in the Plant Reproduction Laboratories; and performed a large amount of work on the wood collections, in the preparation of dioramas, on drawings and lettering, on records, and in typing and clerical work of various kinds.

The relief workers assigned to the Department of Geology prepared more than 13,500 catalogue cards on the typewriter; numbered 1,600 specimens; copied extensive manuscripts; mounted a number of fossils; and in the case of some especially qualified workers were even able to undertake certain research projects.

Work done by relief assignees in the Department of Zoology comprises the preparation of 15,000 index cards, labels and other

typewriting items; the cataloguing of some 4,000 birds; the tagging of 8,000 fishes; the cleaning of more than 1,000 large and 3,000 small and medium-sized skulls; pinning of about 1,200 insects; and various routine tasks.

From two to twelve relief workers have been assigned to the Division of Printing where they assisted in the type composition and other work on publications, exhibition labels, etc. In the Division of Photography relief workers made 12,800 photographic prints, and prepared 30,500 catalogue cards. A vast amount of typing and clerical work of various kinds was performed by relief workers in the Library, the Division of Publications, Division of Public Relations, Division of Memberships, and the Raymond Foundation. In the Maintenance Division ten relief workers assisted the Museum forces in various tasks.

The Art Research Classes conducted at the Museum in cooperation with the Art Institute of Chicago were continued on the expanded and diversified plans inaugurated in 1933. This was the second year in which, in addition to the original class in drawing, painting and illustration with an enrollment of some fifteen students, there were conducted also a separate training class for art teachers with an enrollment of thirty students; and a summer class for teachers and others whose employment makes it impossible for them to attend the autumn, winter and spring courses, with fourteen students. Mr. John Gilbert Wilkins, of the faculty of the School of the Art Institute, who has been in charge of these classes since 1922, states that the students have produced much work of remarkably high quality in the various branches of art studied—drawing, painting, design and sculpture. The Museum exhibits are used as subjects by these students, and the Museum provides a classroom with working facilities to aid in their instruction and to give them a place for the development of their ideas. Many of the graduates, Mr. Wilkins reports, have met with notable success in professional art fields, some having attracted nationwide attention as creative artists, and others having reached a high pinnacle as teachers of art.

In addition to the classes in art research, which are composed of advanced students, the classes of young children inaugurated in 1932 by the Saturday School of the Art Institute have been continued at Field Museum. The enrollment in these in 1934 was 74, and included children ranging from fourth grade pupils to those of high school age.

Continuation of measures instituted several years ago to save expense connected with electric lighting again resulted in a worthwhile economy during 1934.

Maintenance of the building was given proper attention by the Superintendent of Maintenance, the Chief Engineer, and the working forces under their supervision. As usual, a number of improvements were made, of which some of the more important are detailed below:

To provide for the installation of the series of bronze and marble sculptures of British champion domestic animals presented by Mr. Marshall Field, it was necessary to remodel Hall 12 on the first floor completely. Ten walnut cases with individual illumination were built around the room. The floor, both inside and outside the cases, and the bases, were covered with rubber tiles of "Napoleon gray" color. The walls and illuminating hoods were finished in pure white paint, flat finish. The sculptures were installed on their original wooden pedestals. Three walnut benches were provided in the hall.

To provide additional space and afford a better arrangement of the bird and mammal storage cases in Rooms 76 and 77 on the third floor, the corridor walls formerly separating these two rooms were removed, and rooms and corridor were combined into a single room 43 feet wide and 143 feet long, making an area of 6,149 square feet, with better light and air. The total area of the two rooms when separated by the corridor was 5,005 square feet. The increase in area obtained by removal of the corridor is about 23 per cent, and results in much larger increase in storage capacity by making possible rearrangement of storage cases, and due to the fact that the center aisle can now be utilized by the workers both in the Division of Mammals and the Division of Birds. Twelve additional steel storage cabinets, 68 inches high, with removable center partitions, and 600 half length trays, were provided for storage of bird specimens.

At the north entrance to the building a new rack was provided for displaying stereoscopes, and stereoscopic photographs of Museum exhibits, which were placed on sale.

In Stanley Field Hall the walls, statuary, columns, and arches of the colonnades were vacuum cleaned.

At the east end of Chauncey Keep Memorial Hall (Hall 3) two new cases were built for exhibits pertaining to physical anthropology. In the main part of this hall seven new pedestals were built to provide for the installation of additional bronze figures of racial types received during the year from the sculptor, Miss Malvina Hoffman.

In William V. Kelley Hall (Hall 17), the maintenance division provided the ground framework for the new groups of sambar deer, swamp deer, proboscis monkeys, and sloth bears, and also for a group of snow-leopards not yet completed. The cases containing the first four of these groups, and also one containing the Bengal tiger group, were glazed and finished.

In Hall 20 (habitat groups of birds) the case in which the Bering Sea bird group has been reinstalled was glazed and finished. Two new floor cases with screens were provided for additions to the systematic exhibits of birds in Hall 21. In Carl E. Akeley Memorial Hall (Hall 22) the case containing the gorilla group was remodeled, ground framework was provided for the new aardvark group, and the cases containing the aardvark and bongo groups were glazed and finished.

In Hall 32 (ethnology of China and Tibet) thirty cases were refitted with a new shade of cloth on their backgrounds, and with Upson board floor lining and end panels. The interior fittings of 49 cases were repainted. A six-by-twelve foot floor case was built from salvaged material. The Tibetan temple bell was reinstalled on a new frame and placed in a separate case. Eleven Tibetan paintings were hung. In the north balcony of the second floor a sixteen-foot Chinese screen was installed to replace one which was removed and packed for shipping.

At the entrance to the Hall of the Stone Age of the Old World (Hall C) the case containing the new exhibit illustrating the ancestry of man was glazed and finished. In the east end of Hall F (Polynesian and Micronesian ethnology) a new wall case was provided for the installation of a large Marquesan feast bowl.

For the Division of Photography a washing box, accommodating 144 negatives, and two ten-drawer card-filing cabinets were made.

On the fourth floor forty shelves and runners were provided for the steel cabinets used for storage of bones. Two five-by-twelve foot glass cases were fitted with shelves for storage of leg bones and others in frequent use by the taxidermists. In the taxidermy shop a zinc-lined box for modeling clay was provided to take the place of stone jars formerly used.

Six corridors and twenty-one rooms on the third floor of the west half of the building were repainted, and three rooms were washed.

A large amount of work was done on the exterior of the windows of the building. On the ground floor 101 window sills were scraped,

repaired, and repainted. On the first floor 218 were similarly treated. On the second floor, in courtways, there were installed 58 new sills with water bars bedded in cement, 27 new transoms, 25 new jambs the full length of frames, and 33 new jambs of lengths varying from one to five feet. One hundred and twenty large upper panes of glass were reset in new putty. Ninety-six entire frames were scraped, caulked and painted.

On the roof a great amount of repair work was done, principally where seams had sprung. In three places at the east end where ice fell and punctured the rubberoid, allowing the insulation to get wet, repairs and replacements were made.

Among the tasks performed by the force under the supervision of the Chief Engineer were the following: All lighting fixtures in the exhibition halls were washed. Vacuum valves on all radiators were cleaned and adjusted. Combustion control apparatus was installed on the boilers, increasing the efficiency of the stokers. Forty buckets were made for the coal conveyor. The boilers were turbed and all brick work was repaired. The work of painting the boiler walls and ceiling was begun (aluminum paint is being applied to all iron work as a rust preventive). In the new Hall 12, devoted to exhibition of sculptures of domestic animals, thirty-eight wall lights and nineteen case lights were installed. To provide more effective lighting of the systematic bird exhibits in Hall 21 the lights were lowered five feet. In William V. Kelley Hall (Hall 17) seven cases were equipped for concealed illumination of habitat groups of animals, and fourteen label reflectors were installed.

During the months when heat was required, the Museum continued, under its contract with the John G. Shedd Aquarium, to furnish steam from its plant to the aquarium.

In the following pages are detailed reports on the year's activities in each of the Departments and Divisions of the Museum:

DEPARTMENT OF ANTHROPOLOGY

EXPEDITIONS AND RESEARCH

Three expeditions operated in the interest of the Department of Anthropology during 1934. One of these, jointly sponsored by Field Museum and the Carnegie Institution of Washington, D.C., and led by Assistant Curator J. Eric Thompson, continued excavations at the Maya ruins of San José initiated by the Third Marshall Field Archaeological Expedition to British Honduras (1931). San

José is in the western part of British Honduras, near the Guatemalan frontier. The 1931 excavations revealed pottery of a non-Maya ceramic tradition, but yielded no information as to its position in a definite ceramic sequence. The principal object of the 1934 Field Museum-Carnegie Institution Joint Archaeological Expedition was to unearth additional information that would definitely establish this sequence, and perhaps shed light on the vexed question of the correlation of the Maya calendar with the Gregorian.

So far as the ceramic sequence is concerned, the objective was attained, for the non-Maya pottery was found to occur during the latest ceramic period. However, time has not yet been available for an intensive study of the sherds to determine what light may thereby be thrown on the correlation question. Preliminary investigations of the sherds collected would indicate five periods.

Among more spectacular finds was a unique ax, nearly ten inches long, the head and haft of which were chipped from a single block of obsidian. Associated with it was verdigris, all that remained of the first metal objects ever found under archaeological conditions in the southern Maya region. Both ax and copper remains had been deposited, apparently, during the last ceramic period. This period was also richest in trade pieces.

The few stone buildings at San José had been erected in a late period. Exterior sides of walls were faced with well-cut stone blocks, whereas interior sides were covered with irregular blocks haphazardly placed, the rough surfaces hidden by liberal coatings of plaster.

Many burials were uncovered, and in almost every case the skeleton was found lying on its side, in a flexed position, with head toward the south.

A new site, known locally as Mun Diego, was discovered southwest of San José about four miles, as the crow flies, although the circuitous route that had to be followed by the expedition was nearly eleven miles long. Mun Diego, a somewhat larger site than San José, is equipped with a ball court, and around the various mounds several plain stelae were found. Unusually large is the city's great plaza, flanked on all four sides by mounds. There are also three small sunken courts.

The expedition remained in the field from February to May. The share of the finds assigned to the Belize Estate and Produce Company, owners of the land on which the ruins are situated, was purchased for Field Museum by means of a special grant of \$300 generously provided by the Carnegie Institution of Washington.

The Fourth Field Museum Archaeological Expedition to the Southwest, under the leadership of Assistant Curator Paul S. Martin (who has since become Acting Curator of the Department) continued for fourteen weeks its archaeological investigations on the Lowry ruin in southwestern Colorado, about thirty-two miles northwest of Cortez, Montezuma County. As in the previous three years, the expedition was financed from the income of a fund donated by the late Julius and Augusta N. Rosenwald. The ruin was explored under a permit granted by the United States Department of the Interior.

The excavations were greatly expedited through the aid given by the Montezuma County Emergency Relief Administration, which furnished six to ten men for a period of nine weeks. Special thanks are due to Mrs. Alice Van Diest, Director of Colorado State Relief, and to Mr. Harry E. Kauffman, Administrator of the Montezuma County Emergency Relief Administration, and his associates, for their helpful cooperation.

With the force thus furnished, certain large excavations which had been deferred in previous years, were undertaken. The first digging was at the south end of the pueblo. It soon became apparent that this section was built late, and belongs to the period called "Mesa Verde," designating a culture characterized by a certain kind of masonry, by small, low-ceilinged rooms, and by a polished pottery decorated with vegetable paint in designs typical of the Mesa Verde region.

In this late addition eleven living rooms and one small kiva were excavated. The latter had been at one time a rectangular living room which later was converted into a crude ceremonial chamber, three sides of which were straight, and the fourth, curved. Then, in order to simulate a subterranean structure, an extra wall had been built about two feet from the south side, and the space thereby created was filled with earth.

A large refuse heap underlay the floors and the walls of the late rooms and extended beyond the outer walls for some thirty feet. In this were found fourteen burials, four of them under walls. This cemetery is the first and only one positively belonging to Lowry pueblo proper. Burials unearthed by the expedition in other years lay 500 feet or more from the main building and very likely belonged to near-by remains of small, crude, early houses.

Most of the summer was spent in excavating the Great Kiva, which lies approximately 300 feet east of the pueblo. When the

work was completed it was found that this large ceremonial structure was in some respects different from other Great Kivas which have been excavated. This kiva is forty-eight feet in diameter, has a stairway on the north side only, and is furnished with one low bench. A crude fire-pit, dug into the floor, is situated between the two south pillars. The kiva contains no *sipapu*; that is, the small hole usually found in the floor, through which spirits were believed to enter and through which priests talked to them.

The roof pillars are of masonry, and stand thirty inches above the floor. All are the same height, and are level, smooth, and well finished on top; therefore, it seems evident that they never were built higher. Probably large upright poles stood on these pillar bases. Three pairs of niches were found in the outer wall, one above the other, on east, south, and west sides. A single niche was located in the northwest quadrant, making a total of seven. All were unsealed and empty.

A number of small beam (?) holes (from one to two inches in diameter) were discovered in the outside kiva wall. These were at varying heights, from eight to thirty inches above the banquette. In each, burned or rotten ends of poles were found. Their function is unknown. The vaults were crudely constructed, with earthen floors and some masonry.

Two extensive secondary sections of masonry were found: one surrounding the two pillars and vault on the east side, and a similar one on the west. The purpose of these is unknown. The kiva floor, on east and west sides, is slightly higher than in the center, and the supplementary masonry may have served as a retaining wall for east and west platforms.

The arrangement of peripheral chambers at Lowry differs from that found in Great Kivas in New Mexico at Aztec and at Pueblo Bonito in Chaco Canyon, for instead of being surrounded by small rooms, there are only three peripheral chambers possessing masonry walls. A large alcove-chamber containing a fire-pit was discovered on the north side of the Great Kiva. The floor of this room is about eight feet above the kiva floor. Into this room the north door and stairway lead. Two more peripheral chambers were found, one on the east side and one on the west. These are built with low, fragile masonry walls and are smaller than the north alcove.

It was surprising to find no continuous band of peripheral chambers surrounding this Great Kiva. To be certain that no mistake had been made, trenches were cut across the outer kiva rim.



IMPERIAL DRAGON SCREEN

George T. and Frances Gaylord Smith Hall (Hall 24)

This screen was placed behind the throne in the Peking Palace
of the Manchu dynasty, K'ien-lung period (1736-95)

Presented by The Arts Club of Chicago

Had there been any masonry walls there, they would have been discovered; however, none were located.

But large pieces of charcoal were found in these trenches. Their presence suggested the possibility that a pole-and-brush structure had stood on the same level as the peripheral chambers. Therefore the trenches were widened, and the dirt banked up on the side of the extra-kiva rooms was removed. The expected evidence was found, and it now seems safe to say that the north, east, and west (and perhaps south, if it exists) peripheral chambers were joined by a series of rooms of jacal or pole-and-brush construction.

A closer inspection of the north, east, and west chambers was made, and it was observed that the masonry walls were crudely built. In fact, in many places large slabs took the place of coursed masonry. Also, the walls of these chambers were fragile. Because of this, they probably never were carried very high. Moreover, postholes were found in the corners. It was then concluded that the walls had been built with masonry bases and wattle-and-daub upper portions.

Heretofore, a block of four rooms in the center of the pueblo has been regarded as a nucleus of early Chaco construction. Investigations this season indicated that there was an earlier, more typical Chaco section. This is composed of walls of typical Chaco-like slab masonry, but, unfortunately, later dwellers tore out many walls and so modified this section that it is impossible to reconstruct the size or shape of the early building. The "Mesa Verde" people ingeniously bonded many of their walls to the Chaco ones in a manner that makes it often impossible to tell exactly where Chaco wall ends and Mesa Verde begins.

With the help and guidance of Mr. Lawrence Roys, a structural engineer of Moline, Illinois, who has studied Maya construction, an intense survey and analysis of masonry was begun. Heretofore, archaeologists have called certain walls "Mesa Verde" or "Chaco," but no criterion has existed for identifying many hybrid types. It is not certain that masonry can be classified so accurately as pottery, but some generalizations may be worked out.

The Museum gratefully acknowledges the assistance rendered the expedition by Mr. Robert Burgh, cartographer of the United States National Park Service, who, at his own expense, surveyed and mapped Lowry ruin and the surrounding area; by Dr. Pierce Butler, of the University of Chicago, who lent his surveying instruments; and by Mr. Roys, who spent a month in making a detailed analysis of pueblo masonry.

The Field Museum Anthropological Expedition to the Near East, 1934, sponsored by Trustee Marshall Field, began work in Iraq on April 2. Assistant Curator Henry Field, leader, was accompanied by Mr. Richard A. Martin, who was in charge of photography and zoological collecting. The expedition continued the somatological study of peoples of the Near East, begun by Mr. Field in 1925, and also collected ethnological, zoological, botanical, and geological specimens.

The anthropological work included measuring and photographing representative series of important racial elements of the Iraq population. During four months approximately 2,500 individuals were observed anthropometrically. These included 300 Marsh Arabs, 750 Kurds, 475 Shammar Beduins, 250 Assyrians, 175 Dulaim, 150 Jews, 100 Mandaeans, 300 Yezidis, 50 Sleyb, and 80 Turcomans. Forty standard observations and measurements were taken on each individual. Frontal and profile photographs, and hair and blood samples were obtained wherever possible. Dr. Carl Rassam, of the Royal Hospital, Bagdad, contributed records of his measurements on 500 men, women, and children.

Miss Winifred Smeaton, of Ann Arbor, Michigan, accompanied the expedition on its work in Iraq, joining the party at Bagdad about the middle of April and returning to Bagdad about July 15. Her work was the study of the women of each group. Her results should prove of scientific importance, as statistics on women have not been available from this area.

In Iraq several specialists collected data for the expedition. Mrs. E. M. Drower, of Bagdad, made ethnological and linguistic studies of the Marsh Arabs; Mrs. Donald Clawson, of Beirut, made a special study of the teeth of the Kurds and Shammar Beduins; Dr. Walter P. Kennedy, of the Royal College of Medicine, Bagdad, collected blood samples; Mr. Albert Meymourian, entomologist of the Rustam Agricultural Experimental Farm, collected insects in the Amara marshes; Mr. S. Y. Showket, of Basra, acted as interpreter and general assistant; Mr. Khedoory Muallim, whose services were lent by the Royal Hospital, Bagdad, collected birds in the Amara marshes; Mr. Yusuf Lazar, of Bagdad, collected plants in Iraq and Persia.

The expedition received unusual cooperation from Iraq officials, as well as from many private individuals. Outstanding among the many persons who rendered valuable assistance are the Prime Minister, Ali Jaudet Beg; the Minister of the Interior, Sir Kinahan

Cornwallis; Mr. C. Grice, of the Ministry of the Interior; Major W. C. F. Wilson, adviser to the Iraq government at Mosul; the Air Vice-Marshal; the American Minister, Mr. Paul S. Knabenshue; Squadron Leader A. R. M. Rickards, of the Royal Air Force; Dr. Walter P. Kennedy, of the Royal College of Medicine, Bagdad; Dr. T. H. McLeod, of the Royal Hospital, Mosul; and the Mutte-sarifs of the Mosul, Kirkuk, Erbil, and Amara Liwas.

Through the courtesy of Professor James H. Breasted, Dr. H. Frankfort, director of the Oriental Institute Expeditions of the University of Chicago, very kindly lent the expedition a motor-wagon for general use in Iraq; and Mr. Gabriel Malek also gave generous assistance to the expedition.

A search was made for archaeological sites in the North Arabian desert, lying in Iraq, Transjordan and Syria. Flint implements collected on the surface prove the former existence of paleolithic and neolithic man in that region. The Iraq Petroleum Company invited the members of the expedition to use their pipe-line stations and cooperated in every possible way.

In Kurdistan flint implements of upper paleolithic types were found in the gorges of Zakho, Aqra, Rowandiz, and Sulaimaniya, thus welding together a chain of evidence which proves that ancient man once roamed the territory between Kurdistan and the Mediterranean.

Kish was visited in order to ship to Chicago the antiquities left there by Mr. Louis Charles Watelin, late field director of the Field Museum-Oxford University Joint Expedition to Mesopotamia. The objects, contained in twenty-one cases, included many fine specimens belonging to the Sumerian, Babylonian, and Sasanian periods. There was also a series of human skulls.

At the end of July, Messrs. Field and Martin, accompanied by Dr. Walter P. Kennedy and Mr. Yusuf Lazar, proceeded to Persia. The members of the expedition were guests of Dr. and Mrs. Erich Schmidt for four weeks at Rayy, near Teheran, during work in that vicinity. At Isfahan Mr. and Mrs. Myron B. Smith cooperated with the expedition, and accompanied it to Persepolis, where Professor Ernst Herzfeld, field director of the Oriental Institute Expedition to Persia, cordially received the party. Anthropometric data were obtained on 50 Persians in the village of Kinareh, near Persepolis; 100 Jews in Isfahan; 50 Persians in Yezd-i-Khast; and 35 Persians at Rayy. Zoological, botanical, and geological specimens were also collected. Cordial cooperation was received from the Prime

Minister, the Minister of the Interior, the Chief of Police, the Governor of Isfahan, and the American Minister, Mr. William S. Hornibrook.

On September 14, Messrs. Field and Martin entered the Union of Soviet Socialistic Republics at Baku on the Caspian Sea. At the request of the United States Department of State and Ambassador William C. Bullitt, the Soviet officials allowed free entry into the Soviet Union for all the expedition equipment. Traveling was greatly facilitated by VOKS (the Society for Cultural Relations with Foreign Countries) and Intourist (the Soviet travel organization), whose representatives rendered every possible assistance. In Baku the Academy of Sciences, the University of Azerbaijan, and the Neft Geological Museum were visited. The collections of the Georgian Museum in Tiflis were studied. With the assistance of VOKS fifty male Yezidis were measured in the Kurd Club. These observations will form valuable comparative material with the data obtained on the two groups of Yezidis studied in northern Iraq. Ordzhonikidze was reached by automobile over the Georgian Military Highway. The peoples of northern Ossetia in the Caucasus have been little studied from the standpoint of physical anthropology. Through the assistance of Mr. T. Demurow, local chairman of Northern Ossetian Education, anthropometric observations, measurements, and photographs of 100 men and 50 women were compiled. In addition, a staff of medical assistants was provided by the Soviet government to obtain specimens of blood, hair samples, weight, pulse, temperature, and hand pressure of these individuals. The 150 blood samples were sent to Dr. Walter P. Kennedy, Royal Hospital, Bagdad, for study.

Messrs. Field and Martin visited the various academies of science, museums, universities, and libraries in Rostov-on-Don, Kharkov, Kiev, Moscow, and Leningrad. During the five weeks spent in the Soviet Union they were able to study many museum collections, visit sixty-eight institutions of various kinds, and meet the leading Soviet anthropologists and archaeologists. Plans for exchanging scientific material and publications were discussed.

Mr. Field returned to the Museum in December, preceded by Mr. Martin, who came back in November.

Classifying the data and photographs of the expedition has already begun, and the zoological, botanical, and geological specimens have been distributed to the various Departments.

News of the death of Mr. Louis Charles Watelin, late field director of the Field Museum-Oxford University Joint Expedition to Kish,

was received at the Museum with regret. Mr. Watelin died in July while on his way to Easter Island to examine newly discovered inscriptions. His death deprives Near Eastern archaeology of one of its foremost figures, and the Museum of a loyal friend and valuable scientific collaborator. Mr. Watelin had worked at Susa with de Morgan. His discoveries at Kish have thrown a flood of light on the ancient history of Mesopotamia.

The *Ovimbundu of Angola* by Assistant Curator Wilfrid D. Hambly was published in July. This report covers a portion of the research of the Frederick H. Rawson-Field Museum Expedition to Africa, 1929-30. The manuscript of Mr. Hambly's report on the same expedition's work in Nigeria is now completed.

Fourteen signed and thirty-three unsigned articles and brief items were contributed by the staff of the Department to *Field Museum News* during the year. The staff also supplied material for forty-four newspaper publicity stories during the same period.

ACCESSIONS—ANTHROPOLOGY

The number of accessions recorded during the year is forty-two. Of these, thirty are gifts, five result from expeditions, two are purchases, and five were obtained by exchange. The total number of objects received in these accessions is 17,538.

The American Friends of China, Chicago, presented an imperial brush-holder made of Burmese padouk wood, with inlaid inscriptions and designs in ivory, jade, and semi-precious stones. This belonged to the Emperor K'ien-lung and is dated A.D. 1736.

From the National Museum of Copenhagen, Denmark, there were acquired 170 archaeological and ethnological objects of southern and eastern Greenland. These are localities from which the Museum heretofore possessed but scanty material. The collection comprises fur and skin garments, bone and stone tools, fishing accessories, and toys. This material is especially valuable because it is now difficult to obtain such specimens from that region. In exchange for it, Field Museum sent ten archaeological objects from France, and eight from Mexico, and thirty-six ethnological objects from the Northwest Coast of America.

The collections made by Assistant Curator J. Eric Thompson, as leader of the Field Museum-Carnegie Institution Joint Archaeological Expedition to British Honduras, contain 6,199 archaeological objects gathered at the site of San José in the northern part of the Cayo district of British Honduras. This large and important collection consists of pottery vessels, pottery whistles and figurines,

potsherds, stone knives and spearheads, jade ornaments, two mirrors, one pearl, and a monolithic ax of obsidian.

The Fourth Field Museum Archaeological Expedition to the Southwest, under the leadership of Assistant Curator Paul S. Martin, obtained more than 3,600 archaeological objects from the Lowry ruin, near Ackmen, Colorado. This collection comprises pottery, potsherds, human skeletons, arrowheads, bone awls, and butts of roof beams, from which it is hoped dates may be obtained. One hundred and twenty-eight negatives were exposed.

Some of the roof logs obtained from Lowry ruin in 1932 and 1933 were sent for examination and possible dating to Dr. Emil W. Haury, Assistant Director, Gila Pueblo museum, Globe, Arizona. Dr. Haury assigned approximate cutting dates of A.D. 950 to two roof logs, and exact cutting dates of A.D. 1106 to two others. The figure A.D. 950 is only approximate because the outer rings from the logs in question are missing. Other roof beams were forwarded for study to Mr. W. S. Stallings, Jr., Dendrologist, Laboratory of Anthropology, Santa Fe, New Mexico, who reports that he has ascertained seven dates. Five of these were obtained from roof beams of one room and indicate that these logs were cut in A.D. 1090. Two other logs which served as door lintels are dated A.D. 1103.

Grateful acknowledgment is hereby made to Dr. Haury and Mr. Stallings for dating these log samples from Lowry ruin; and to Mr. Harold S. Gladwin, Director of Gila Pueblo museum, and Mr. Jesse L. Nusbaum, Director of the Laboratory of Anthropology, for placing the facilities of their respective institutions at the disposal of Field Museum.

The Field Museum Near East Expedition, 1934, sponsored by Trustee Marshall Field, and led by Assistant Curator Henry Field, brought back for the Department of Anthropology anthropometric data on 2,500 individuals; 5,000 photographs of racial types; 300 specimens of blood; 300 teeth smears; 800 hair samples; 500 flint implements of paleolithic and neolithic types from the North Arabian desert, Kurdistan, and Persia; Himyaritic inscriptions on ten basalt blocks from Transjordan; and two fragments of twelfth century Mohammedan vessels with unusual decorations. For other Departments this expedition collected 1,000 animals preserved in formalin, 750 insects, 40 birds and mammals, and 1,500 plants.

By exchange with Gila Pueblo museum, Globe, Arizona, Field Museum acquired thirty pieces of pottery from various ruins in New

Mexico and Arizona. This collection is especially valuable because it contains southwestern types which the Museum lacked. Noteworthy are seven pottery bowls from the Mimbres valley, a locality in New Mexico in which realistic art reached a high development. Likewise of interest are four pottery dishes from southern Arizona, the region in which flourished the famed Hohokam culture. In return for this material, Field Museum sent seventeen South American archaeological objects.

The Museum's South Pacific collections were enriched by a valuable gift from Mr. Templeton Crocker, of San Francisco, of 835 ethnographical objects, nine phonograph records, and 325 photographs. This was the more welcome as the major portion consisted of representative collections from the little-known islands of Anuda, Rennell, and Bellona, previously unrepresented in the Museum. There were also many objects from other islands, including a large, finely carved Marquesan bowl, ornamented mats from Puka Puka, and various objects from Samoa, Sikaiana, the eastern Solomons, and the Santa Cruz group.

Through an exchange with the Mexican National Museum of Archaeology, History and Ethnography it was possible to fill a number of gaps in the Museum's collections from Mexico. The most spectacular object thus acquired was a model of the very ornate Pyramid of Quetzalcoatl at San Juan Teotihuacan, Mexico. This, like the previously acquired models of a palace at Mitla and a pyramid at Uaxactun, is valuable in illustrating the architectural achievements of the aboriginal civilizations in Latin America. The new model measures more than six feet in length.

Among other objects acquired through this exchange were three fine funerary urns decorated with large seated deities in relief, belonging to the Zapotecan culture of Oaxaca, Mexico; a representative collection of Zapotecan pottery figurines; and several Maya pottery figurines from the island of Jaina, off the coast of Mexico. To the Mexican museum there were sent from Field Museum, in this exchange, seventeen archaeological objects of the southwestern United States, 104 European archaeological objects, and fifty-four from South America.

An important gift was received from Mr. Harry T. Getty and Dr. A. E. Douglass, both of the University of Arizona, at Tucson. This collection consists of twenty polished cross sections of wooden beams from various dated Southwestern ruins; a tubular borer, such as is used by dendrologists in obtaining small wood samples from

timbers still *in situ*; eleven photographs, and four charts. Some of the cross sections were presented jointly by Dr. Douglass and the National Geographic Society, Washington, D.C. This acquisition made possible an exhibit explaining the method used to obtain dates for prehistoric buildings in the Southwest.

In memory of their mother, Mrs. Blanche R. Mandel, Messrs. Fred L. Mandel, Jr., and Leon Mandel, of Chicago, presented fourteen choice Lamaist paintings dating from the eighteenth and nineteenth centuries.

Miss Grace Brewster Cross, of Chicago, gave the Museum five valuable specimens from Hawaii: two headbands, one of feathers and one of shell; two strings of seed beads; and one string of crabs'-eyes.

From Mr. T. Ito, of Chicago, the Museum received a Japanese reproduction (1807) of a series of Chinese wood-engravings illustrating agriculture and sericulture, in exchange for a Chinese painting on glass.

In exchange for a lapis-lazuli cylinder seal from Kish, Mr. Fahim Kouchakji, of New York, sent the Museum a most beautiful and rare Syrian glass pitcher of the fourth century A.D. It is hexagonal in shape, and the glass is an opaque blue-black.

From Mr. Hubert Beddoes, of Chicago, the Museum received a gift of a very valuable folio album containing 134 large and most unusual photographs taken during the years from 1873 to 1876 in China, Japan, and Java.

Eleven more sculptures in bronze, the work of Miss Malvina Hoffman, were received, and installed in Chauncey Keep Memorial Hall (Hall of the Races of Mankind).

From the estate of the late Edward E. Ayer, Benefactor, former Trustee, and first President of the Museum, and the late Mrs. Ayer, eighteen Navaho blankets were received.

Professor Rowland Rathbun, of Chicago, presented the Museum with twenty-three of his carefully sketched and valuable drawings of Sasanian stucco-work taken from the frescoes of fifth century A.D. Sasanian buildings.

Two large aerial photographs of the Hopewell Mounds, Ohio, were presented by Captain Dache M. Reeves, of the United States Air Corps at Dayton, Ohio. These mounds were excavated in 1891-92 and the valuable archaeological material was later acquired by Field Museum. It is interesting to have an aerial view of mounds which were investigated some forty years ago.



GREAT KIVA OR CEREMONIAL CHAMBER

Lowry ruin, Colorado. Diameter 48 feet; depth 8 feet

Photographed from a 50-foot tower

Field Museum Archaeological Expedition to the Southwest, 1930-34

Mrs. Frank S. Johnson, of Pasadena, California, daughter of the late Edward E. Ayer, presented a beautiful mandarin coat from China.

An interesting figure of the god Vishnu riding on the mythical bird Garuda was given by Mr. Allyn D. Warren, of Chicago. This gift shows the fine wood-carving art of the modern Balinese.

From the Field Museum-Oxford University Joint Expedition to Mesopotamia twenty-one cases of Sumerian, Babylonian, and Sasanian objects excavated at Kish, Iraq, were received.

The African ethnological collections have been enriched by the addition of twenty-eight west African objects which are the gift of Mrs. Rudyerd Boulton, of Chicago. The objects are of particular value because they form a unit representing the musical skill of west African Negroes. Instruments of percussion, wind instruments, and those played by strings are all represented. A human figure, carved in wood, from Dahomey, is of especial value because such objects, associated with religious beliefs and practices, are difficult to obtain.

CATALOGUING, INVENTORYING, AND LABELING—ANTHROPOLOGY

Of the forty-two accessions received during the year, thirty have been entered. Seven accessions of previous years have also been entered.

Cataloguing has been continued as usual, the number of catalogue cards prepared during the year totaling 4,032. The total number of catalogue cards entered from the opening of the first inventory volume is 211,407.

The catalogue cards prepared are distributed as follows: archaeology and ethnology of North America, 1,771; archaeology and ethnology of Central and South America, 750; archaeology and ethnology of China, Tibet, and Japan, 126; ethnology of Africa, 24; ethnology of Melanesia, 858; ethnology of India, 489; ethnology of the Near East, 2; ethnology of Polynesia, 5; ethnology of Australia, 1; ethnology of Dutch East Indies, 1; ethnology of Europe, 1; physical anthropology, 4. Most of these cards have been entered in the inventory volumes, which number fifty-seven.

A total of 9,117 labels for use in exhibition cases was supplied by the Division of Printing. These labels are distributed among the collections as follows: Chauncey Keep Memorial Hall, 682; Indians of California, 18; Southwestern United States, 72; Central America, 762; South America, 1,477; China and Tibet, 3,485; Melanesia, 464; Hall of the Stone Age of the Old World, 6; Africa, 2,016; Malay

Archipelago, 102; and 33 hall labels. The Division of Printing also supplied 75 case numbers, 1,140 catalogue cards, and 5,500 index cards.

The number of photographs mounted in albums is 1,026. Five new albums were opened. To the label file 1,289 cards were added.

Assistant Curator Albert B. Lewis is preparing an index of material which is on exhibition in Joseph N. Field Hall (Hall A).

Assistant Curator Wilfrid D. Hambly devoted much time to classifying photographs secured by Miss Malvina Hoffman while fulfilling her commission to sculpture representative types of races.

INSTALLATIONS AND REARRANGEMENTS—ANTHROPOLOGY

The department has continued its work of installing new collections and of modernizing the older exhibits. Many old-style black labels have been replaced with shorter, more interesting statements printed on buff cards in black type. Ninety-seven cases were installed during the year.

In Stanley Field Hall a case of attractive scarfs such as are worn by all castes of Hindu women; a case of Peruvian textiles; and a case of rare and decorative lacquered wooden vessels from Peru have been placed on exhibition.

During the year, eleven more sculptures in bronze, the work of Miss Malvina Hoffman, have been added to Chauncey Keep Memorial Hall (Hall 3). These additions comprise heads or busts of a Berber, an Alpine Austrian, a Zulu woman, a Turk, a Toda, a Pueblo woman, a Jicarilla Apache, a Carib, a Korean, a Bontoc Igorot, and a life-size figure of a Navaho.

Assistant Curator Henry Field installed, also in Chauncey Keep Hall, seven cases of exhibits in physical anthropology. These show physical characters of various races; differences in hair forms; types of deformation and tattooing practised by various peoples; trepanning as practised by primitive peoples, and endocranial casts of various races and mammals; casts of hands and feet of different races; skeletons of anthropoid apes and man (for comparative purposes); and skeletons of the principal human races. The ten skeletons used were prepared by Assistant Curator Edmond N. Gueret, osteologist in the Department of Zoology.

An exhibit illustrating the Douglass method of dating prehistoric buildings of the Southwest by means of a tree-ring chronology was installed in Hall 7 by Assistant Curator Martin. This exhibit is of particular interest to many people because it shows how the tree-ring calendar was built up and how an ancient wooden roof beam is

actually dated. The specimens and photographs used in this installation were prepared by Mr. Harry T. Getty, and were jointly presented by Mr. Getty and Dr. A. E. Douglass, both of the University of Arizona, Tucson.

The reorganization of Halls 8 and 9 was continued during the year under the direction of Assistant Curator Thompson. Twelve cases of archaeological and ethnological material were placed on exhibition. Many of the objects, including pottery, textiles, and stone-work, had never before been displayed. Included is a case in Hall 8 of archaeological material obtained from the San José ruin in British Honduras, by the Field Museum-Carnegie Institution Joint Expedition, 1934.

Reinstallation of Hall 32, devoted to the ethnology of China and Tibet, proceeded with remarkable celerity. Forty-four cases were installed. These comprise sacred objects from a Lama temple, armor and weapons, women's costumes, masks used in Tibetan mystery plays, utensils and food, musical instruments, basketry, images, wood-carvings, and a temple bell from Tibet; and theatrical costumes, baskets, textiles, palace curtains, imperial costumes, Manchu dresses, armor, rugs, embroidery, printing and writing materials, tableware, musical instruments, and jewelry from China. At the north end of the hall, a group of nine painted, wooden panels showing the genealogy of the Pan-Chen lamas, and two portraits in oil, have been hung.

During the greater part of the year the work in Hall 32 was carried on under the personal supervision of Dr. Berthold Laufer, Curator of Anthropology. Since his death in September, the installation of this hall has been ably continued by Assistant Curator Thompson, in accordance with plans and notes which Dr. Laufer had prepared.

The passing of Dr. Laufer was a severe blow to his associates in the Department, of which he had been Curator since 1915, and in which he had worked in other capacities since 1907. While his scholarship achieved its summit in his researches in the realm of Oriental subjects, his brilliant mind encompassed vast knowledge of all branches of anthropology, and his keen, helpful suggestions were always appreciated by the younger men working with him. His staff held him in highest esteem and respect for the genius he displayed in his science, and beyond that, there was a strong bond of affection between him and his assistants.

In Joseph N. Field Hall (Hall A) twelve cases were reinstalled (some new objects being added), and two cases of entirely new

material were installed. This completes the rearrangement of the hall. One new case contains a representative collection from Rennell and Bellona Islands, including arrows and spears with sharp slender points of human bone, finely carved clubs, baskets, bags, mats, pillows, clothing, ornaments of various kinds, and some remarkable heavy wooden shark hooks. The other new case contains material from the Santa Cruz group, including the outlying island of Anuda. Of special interest are tortoise-shell ornaments and a loom on which ornamented bags and mats were woven.

In some of the reinstalled cases is shown material from the Admiralty Islands, including coiled baskets and oil vessels, finely carved wooden bowls, ornamented wooden beds, and large signal drums. Other reinstalled cases contain New Guinea material such as carved figures representing human beings, masks, ornamented canoe prows, and drums, beautifully decorated earthen bowls and pots, ornamented wooden bowls, a house ladder, carved wooden pillows, a drying box, and various other household objects.

An exhibit called *The Ancestry of Man* was installed at the entrance to the Hall of the Stone Age of the Old World (Hall C) by Mr. Bryan Patterson, Assistant in Paleontology. This exhibit, based on data obtained from Dr. W. K. Gregory, of the American Museum of Natural History, New York, is designed to show the relation of mankind to other primates, and particularly the inter-relationships of the various living and extinct races of the human family.

Seventeen newly installed cases of African ethnological material have been placed in Halls D and E. Most of the objects shown in these were collected by Assistant Curator Wilfrid D. Hambly, as leader of the Frederick H. Rawson-Field Museum Ethnological Expedition to West Africa (1929-30). Hall D now contains objects from west and central Africa only. The collection from Cameroon still occupies most of the north side of the hall, and several cases displaying leather goods, weaving, pottery, and metal work have been added. On the south side of Hall D, four cases showing weapons and raffia weaving from the Congo region, and six cases illustrating the arts, handicrafts, occupations, and magical rites of the tribes of Angola (Portuguese West Africa) have been installed.

Near the middle of Hall E, two cases of material from the Kabyles and Tuareg of north Africa have been placed on exhibition. Blankets and clothing woven by Kabyle women are the gift of Mr. Homer E. Sargent, of Pasadena, California. The Kabyle jewelry was presented by Miss Barbara Neff, of Chicago. Several musical instruments of

a north African type were the gift of Mr. H. G. Moore, of Peoria, Illinois. The west end of Hall E is now occupied by cases of material from south and northeast Africa, including Somaliland. Many of the exhibits from Somaliland and Kenya were collected by the late Carl E. Akeley about thirty years ago. Bushman material, including some exceptionally fine necklaces and girdles of ostrich eggshell beads (collected by Mr. Arthur S. Vernay, of New York, while leading the Vernay-Lang Kalahari Expedition of 1930) have been installed.

In alcove A1 two cases showing wood-carving and basketry from Nigeria have been installed. Reorganization of Halls D and E and Alcove A1 was directed by Assistant Curator Hambly.

Plans for Hall K (Japan, Korea, Siberia, and India) are being prepared. Assistant Curator Lewis has started sorting the East Indian material in storage, and two cases of Singhalese masks have been installed and await placement in the hall.

Much work, which could not ordinarily have been done because of lack of time by the regular Department staff, has been accomplished by workers assigned by the Illinois Emergency Relief Commission. These men and women have mounted and labeled some 6,000 photographs; made important subject indexes; typed 2,500 index and catalogue cards; washed and catalogued 9,000 potsherds, and mounted 4,000 of them; repaired and mounted 800 Peruvian textiles on linen; typed many pages of field notes; and performed general clerical work with neatness and dispatch. From one to eleven relief workers have served in the Department for periods of varying length during the greater part of the year.

DEPARTMENT OF BOTANY

EXPEDITIONS AND RESEARCH

The Department of Botany conducted no expeditions during 1934. However, Assistant Curator J. Francis Macbride continued his work in Europe, described in the Reports of 1929 to 1933 inclusive, of photographing type specimens of tropical American plants preserved in European herbaria. This project is still supported in part by a balance of funds furnished some years ago by the Rockefeller Foundation. About 2,000 new negatives were made and forwarded to the Museum, making the total now on file more than 28,000, representing almost as many plants, principally South American species.

The work in 1934 was conducted in the DeCandolle and Delessert herbaria of the Conservatory and Botanic Garden of Geneva. These well-known collections are so rich in type material that it was not possible during the year to complete the photography of their types. Mr. Macbride was aided most courteously by the director of the Geneva institution, Dr. B. P. Georges Hochreutiner, who provided every facility for successful prosecution of the task. Mr. Macbride returned to the United States on vacation in September, but is expected to sail for Europe early in 1935 to resume the work.

As additions to the Herbarium of prints of type specimens have continued, their great value for purposes of study and determination has become constantly more apparent. That they are invaluable for critical work upon the classification of tropical American plants is evident to all systematic botanists, many of whom have had occasion to study them. Prints from the type negatives are made available by Field Museum to botanists generally in the United States and other countries at the mere cost of production. During 1934 two American institutions purchased 1,609 prints from these negatives.

Partly as a result of this work, Dr. Charles Baehni, of the Botanic Garden of Geneva, came to Chicago in August, 1934, to spend approximately a year at Field Museum. His visit, at the invitation of the Museum, will enable this institution to make some definite return for the valuable material received in exchange from the Geneva herbaria, and for the many courtesies extended by Dr. Hochreutiner. Dr. Baehni is engaged in study of the Museum's herbarium material of certain groups of plants in which he is interested.

From the Field Museum Anthropological Expedition to the Near East, 1934, led by Assistant Curator Henry Field of the Department of Anthropology, there was received a collection of approximately 8,500 herbarium specimens of plants. These were obtained chiefly in Persia and Iraq. As these regions were previously almost without representation in the Museum Herbarium, this material will be exceptionally useful. Included are many duplicate specimens to be used for exchange purposes.

Throughout the year the Herbarium has been in constant use by members of the staff of the Department of Botany. It has been consulted also by a large number of visiting students from various parts of the United States and from several foreign countries. The Herbarium of Field Museum is the largest one west of the city of

Washington, D.C., and it is consulted especially by botanists of the numerous large universities within a few hundred miles of Chicago.

The preparation and determination of the extensive plant collections received during the year have fully occupied the time of the Herbarium staff. Through the employment during the year of a number of workers furnished by the Illinois Emergency Relief Commission, and, in the early months, of federal Civil Works Service assignees, it was possible to perform a large amount of clerical and other work that otherwise could not have been undertaken. Most important, it has been possible to mount and add to the Herbarium more than 60,000 sheets of specimens, an exceptionally high number in a single year for any herbarium in the world. Many collections of plants that had remained for years in storage were mounted during 1934, and it is expected that if similar assistance is continued, it will be possible to add to the Herbarium during the coming year all the stored collections, some of them of great scientific value.

There were submitted to the Herbarium for study and determination 190 lots of plants, comprising 13,285 specimens. Of these, 64 lots, consisting of 4,354 specimens, were named and returned to the senders, while 126 lots, amounting to 8,931 specimens, were retained by the Museum. In addition, there were determined, but not preserved for the collections, many plants from the Chicago region and elsewhere, brought to the Museum by visitors, teachers, and students, or forwarded by mail. Also, there were answered many inquiries by mail and telephone, requiring diverse information upon botanical subjects.

Through the courtesy of the Department of Botany of the University of Chicago, Assistant Curator Llewelyn Williams was afforded special facilities for the study of the woods of the family Caryocaraceae. This is a small group of tropical trees native in Central and South America, upon which he is engaged in research.

Associate Curator Paul C. Standley published eleven papers based more or less directly upon the Herbarium collections, several of them, dealing with American trees, in *Tropical Woods*. His most important publication consisted of 142 pages of descriptions of Rubiaceae, published in *North American Flora*, in continuation of former parts of the flora treating of the same family. He prepared also a leaflet, *Common Weeds*, issued by Field Museum as No. 17 of the Botanical Series of Leaflets. Assistant Curator J. Francis Macbride published in *Candollea*, issued by the Conservatory and Botanic Garden of Geneva, a paper of 57 pages devoted chiefly

to descriptions of new Peruvian plants, principally those obtained by the various Marshall Field Expeditions to Peru.

A guide book to the collection of North American trees exhibited in Charles F. Millspaugh Hall (Hall 26), was issued during the year. This publication was prepared by Professor Samuel J. Record, the Museum's Research Associate in Wood Technology, and Professor of Forest Products at Yale University School of Forestry. The text covers the same ground as the descriptive labels written by Professor Record for the woods displayed in this hall. Each of the eighty-four species included is described concisely as to appearance of the tree, botanical characters, geographic distribution, and characteristics and uses of its wood. Apart from its reference to the Museum's collection, this booklet, entitled *North American Trees*, with its numerous illustrations, constitutes a useful and instructive guide serviceable to all interested in our native trees and their woods.

Members of the Department staff prepared for *Tropical Woods* many abstracts and reviews of current literature relating to tropical trees and shrubs, and contributed twelve signed articles and twenty other items to *Field Museum News*. Twenty-four newspaper articles resulted from data supplied by the Department.

ACCESSIONS—BOTANY

During 1934 the Department of Botany received 226 accessions, consisting of 34,714 specimens. Thus, while the number of accessions is slightly smaller, the number of specimens is substantially larger than in 1933. The accessions comprised specimens for the Herbarium, for the exhibits, and for the wood and economic collections. Of the total number 6,655 were gifts, 8,132 were received through exchange, 14,858 were derived from Museum expeditions, 1,676 were purchased, and the rest obtained from miscellaneous sources.

Of the Department's total receipts of 34,714 specimens, those for the Herbarium amounted to 33,756 items—plant specimens, photographic prints, and negatives. The Herbarium has received an unusually large amount of particularly valuable material through gifts and exchanges. Among these may be selected for special mention 140 specimens of tropical American Rubiaceae, received in exchange from the Conservatory and Botanic Garden of Geneva, through the courtesy of the director, Dr. B. P. Georges Hochreutiner. These consisted chiefly of duplicate types or otherwise authentic material of historical importance. Another valuable sending, likewise in exchange, consisted of 270 specimens from the Botanic



JABOTICABA

Hall of Plant Life (Hall 29)

Part of a fruiting branch of a Brazilian tree, reproduced from nature in Plant Reproduction
Laboratories, Department of Botany of the Museum

Garden of Madrid. The majority of these were Peruvian plants, collected by Ruiz and Pavón, the famous Spanish botanists who were the first collectors in Peru, about 150 years ago. Most of the specimens represent species named by those authors. The remainder of the Madrid sending consists of plants obtained almost as long ago in Colombia by the famous botanist Mutis.

Among important gifts of herbarium specimens during 1934 may be mentioned the following: 2,702 plants of New Mexico, presented by the collector, Rev. Brother G. Arsène, of Santa Fe, New Mexico; 88 sheets of plants of the Mississippi Valley, given by Mr. Hermann C. Benke, of Chicago; 178 specimens from Bolivia, presented by Professor Martín Cardénas of Potosí, Bolivia, who has been engaged in making collections in the military zones of the Chaco region; 348 Colombian plants, presented by Rev. Brother Elias, of Barranquilla, Colombia; 68 Yucatan plants, from Dr. Román S. Flores of Progreso, Mexico, who accompanied his material with vernacular names and notes that greatly enhance their scientific value; 366 plants from Brazil and Amazonian Peru, collected by Mrs. Ynes Mexia, of San Francisco; 223 specimens from the State of Sinaloa, Mexico, presented by Mr. Jesús G. Ortega, of Mazatlán, Mexico; 160 Mexican plants presented by the veteran collector, Dr. C. A. Purpus, of Zacuapan, Veracruz, Mexico; 250 specimens of rare plants of British Honduras, many of them new species, collected by Mr. William A. Schipp, of Stann Creek, British Honduras; 411 specimens, chiefly Compositae from the Hawaiian Islands, presented by Dr. Earl E. Sherff, of Chicago; 344 plants from Barro Colorado Island, Canal Zone, contributed by Mr. James Zetek, of Balboa, Canal Zone; and an exceptionally valuable lot of 568 plants, chiefly trees of South America, presented by the School of Forestry of Yale University, through the courtesy of Professor Samuel J. Record.

Many of the most desirable contributions have been acquired in return for determination of the specimens. Especially noteworthy is a lot of 1,385 plants of Guatemala, British Honduras, and Mexico, sent for determination by Professor H. H. Bartlett, of the Department of Botany of the University of Michigan. Most of these were collected by Mr. C. L. Lundell, and they form a highly important addition to the Museum's already large representation of the flora of the Yucatan Peninsula.

Besides the collections specifically mentioned above, the Museum received through gifts and exchange much other valuable herbarium

material from tropical America, the United States, Asia, and other regions of the earth. Details will be found in the List of Accessions for the year (p. 238 of this Report).

While under existing financial conditions it has not been possible for the Museum to purchase many of the desirable series of tropical plants offered, there were purchased 1,675 specimens, chiefly from Brazil and Peru.

From the previously mentioned negatives of type specimens of tropical American plants made in European herbaria by Assistant Curator Macbride, there were added to the Herbarium about 3,400 prints, most of which represent species not previously available for comparison.

Of economic plant material, including woods, there were received in 1934 from scientific and commercial institutions, expeditions, and from individuals, as gifts or in exchange, 1,001 specimens. A few of these accessions deserve special mention. An extensive collection of the economic plant products of Persia, Syria, and Iraq were gathered by the Field Museum Anthropological Expedition to the Near East.

A small collection of rare vegetable waxes was received as a gift from S. C. Johnson and Son, Inc., of Racine, Wisconsin. Included are sugar cane wax, tea wax, coffee wax, rose, orange blossom, and mimosa wax. These will form an interesting addition to the exhibit of waxes of vegetable origin displayed in Hall 28.

Through the courtesy of Dr. T. H. Kearney and Mr. C. J. King, of the United States Bureau of Plant Industry, Washington, D. C., the Museum received two fine specimens of cotton plants typical of upland and lowland cotton grown at the United States Field Station at Sacaton, Arizona.

To the collections of domestic and foreign woods there were added 325 numbers. Some of these were accessioned for exhibition purposes, but the majority are to augment the reference collection.

In continuation of contributions made in previous years, Yale University School of Forestry, through the courtesy of Professor Samuel J. Record, contributed 131 specimens of woods, mostly from Central and South America. Through the cooperation of the same institution the Museum received 105 samples of woods collected in Canton and Hainan Islands by Professor F. A. McClure, of the Department of Biology, Lingnan University, Canton, South China.

From the Forest Economist, Forest Research Institute, Dehra Dun, India, there was received a set of hand samples, comprising

thirty species, collected in northern India. Professor Walter W. Tupper, of the Department of Botany, University of Michigan, Ann Arbor, Michigan, furnished several microscopic slides of tropical woods for study purposes.

For the exhibit of osage orange installed in Charles F. Millspaugh Hall (Hall 26) Mr. Hermann C. Benke, of Chicago, donated several negatives and prints of the tree in summer and winter condition; the Von Platen-Fox Company, of Iron Mountain, Michigan, furnished a board of tamarack; and Mr. O. G. Moore of Brownsboro, Alabama, donated a sample of chittam wood. For use in conjunction with the exhibits of American woods the Museum obtained, through the efforts of Professor Emanuel Fritz, of the University of California at Berkeley, California, cone-bearing branches of several Pacific Coast species, viz. redwood, incense cedar, western red cedar, Port Orford cedar and Monterey cypress.

Through the generosity of Mr. W. E. Bletsch, of Highland Park, an Associate Member of the Museum, the services of several men were furnished for cutting a large number of North American woods into hand specimens of a size suitable for distribution among scientific institutions and forestry schools. These woods were not needed for exhibition purposes, and had been kept in storage for a number of years.

The Department distributed through exchanges 1,038 herbarium specimens and photographs to fifteen institutions and individuals in North and South America, Europe, India, and Australia. Thirty-six lots of plants were lent for study to various institutions, and sixty-four lots were received on loan, for study or determination.

CATALOGUING, INVENTORYING, AND LABELING—BOTANY

During 1934 the permanent study collections of the Herbarium have been increased by 61,379 sheets of plants and photographs, besides several thousand sheets bearing original printed or type-written descriptions of new species, or other published matter useful for study purposes. The total number of mounted specimens now in the Herbarium is 735,237. During the year there were removed from the Herbarium 47 duplicate specimens.

The collections of woods and economic plant material were increased by 1,001 items.

With the assistance obtained from the workers furnished by the Illinois Emergency Relief Commission and the federal Civil Works Service, much of the reference and duplicate economic material,

including woods, was overhauled, and rearranged for more orderly and economical storage. Typewritten labels were provided for thousands of such specimens placed in storage, as well as for the material accessioned. About 9,000 cards for the index files were also prepared for the economic reference collections. The albums of photographs which constitute the Department's key to the botanical subjects in the Museum collection of negatives, were brought up to date with numerous additions, and many of the old volumes were reclassified and indexed.

From the Division of Printing the Department received a large quantity of buff labels for new exhibits, as well as for replacement of a large proportion of the black labels which are being eliminated as rapidly as possible from the exhibition halls.

In continuation of the index of new species of American plants there were added to the Museum's file 4,914 cards received from the Gray Herbarium of Harvard University.

INSTALLATIONS AND REARRANGEMENTS—BOTANY

Various additions were made to the exhibits in the Hall of Plant Life (Hall 29) during the year. One resulted from the receipt of a fine *Heliconia* from Mexico, obtained near Veracruz by the well-known botanical collector, Dr. C. A. Purpus, and subsequently grown in the conservatory at Garfield Park. At maturity it was sent by Mr. August Koch, chief florist of the conservatory, to the Museum for determination. It proved to be a new, undescribed, exceptionally handsome species of this tropical genus, which constitutes the American branch of the otherwise Old World banana family. In honor of the capable horticulturist under whose direction Garfield Park Conservatory has become one of the finest institutions of its kind in the United States, the new plant was named *Heliconia Kochiana*. A reproduction of the plant was prepared for the exhibits and placed in the case devoted to the banana family near the north end of Hall 29, while the dried remains of the original have been placed with the numerous other type specimens of tropical American plants in the Herbarium.

A branch of the jujube tree, an Asiatic buckthorn which produces one of the important fruits of northern India and China, was received through the courtesy of Professor Guy L. Philp, of the University of California at Davis, California. Reproduced for the exhibits, this fruiting branch illustrates the botanical characters of the family to which it belongs, and serves as an example of a notable Old World fruit tree which, despite its having been in cultivation

for thousands of years over an area extending from China and India to the south of Europe, still remains almost unknown in the United States. It has been installed together with other material of the buckthorn family, which thus becomes represented for the first time in the Hall of Plant Life.

To the exhibit devoted to the soapberry family has been added a reproduction of the Amazonian guaraná plant, a luxurious tropical vine cultivated in a few localities for its small scarlet, chestnut-like fruits. These, or rather their shiny black seeds, are the source of the stimulating beverage known to the Amazon Indians as guaraná, now extensively used in the manufacture of a carbonated kola-like beverage. The material for this interesting item was obtained by the Marshall Field Botanical Expedition to the Amazon in 1929, as was that for another addition made to the exhibits this year—a fruiting branch of lucuma, reproduced for the exhibits and installed with the sapote family to which it belongs.

The jaboticaba, another fruit, tropical to semitropical in range, but of a very different character, is represented in another new exhibit added to the case devoted to the myrtle family. It comes from southeastern Brazil. Grape-like in appearance, spherical and somewhat larger in size than large Concord grapes, this fruit grows abundantly, in small clusters of half a dozen or less, directly from the bark of the trunk and branches. The jaboticaba has a tough skin and one or more large seeds, but its juicy pulp of wine-like flavor makes it one of the most popular of fruits wherever it is known.

Among minor additions to the exhibits in the same hall are a number of reproductions of fruits secured in Pará in 1929 by the expedition mentioned above. These include several types of sapodillas; taperibá, or golden-apple; the famous Brazilian mango, “manga rosa” of Pernambuco; and the handsome cubú of the Amazon which obviously is related to the tomato, and combines in its shape and coloring features suggestive also of a huge Japanese persimmon.

Various other exhibits for the Hall of Plant Life are under way, one of which, a reproduction of an acanthus plant, will be of particular interest when completed.

In Hall 25 some important additions were made to the exhibit of food plants. In conjunction with the coffee and tea exhibits, two further cases have been given to a display of beverage plants. One is devoted to a display of the botanical features of coffee, maté, cassine tea, kola, guaraná and cacao. A branch of an Arabian coffee

tree, which formerly was a part of the exhibit of Rubiaceae in Hall 29, has been transferred to this new case together with the model of the enlarged flower and sections of the fruit. A small flowering and fruiting branch of the Liberian lowland coffee tree has been reproduced for this exhibit, together with a branch of maté (*yerba mate* or Paraguay tea) from the region of the Paraguay River and adjoining parts of southern Brazil and northern Argentina. There is also included, from the southeastern United States, a branch of cassina, one of several shrubs of the holly family known to the North American Indians as a beverage plant, though never in such general use among them as was the Paraguayan holly among the southern aborigines of South America. A cluster of the fruit of guaraná is shown with the seeds which furnish the beverage, as in the case of the African kola. Cacao is represented by pods of various species and varieties, together with the seeds or "beans." The only very important beverage plant lacking in this display is tea, and to supply this deficiency a reproduction of an entire teabush is to be provided.

The case given to the second group of beverages includes a wide range of fermented drinks with a relatively low alcohol content, and also the more potent fermented liquors of diverse origin. Among the most primitive of fermented beverages shown are palm wine, made from the rapidly fermenting sap obtained by tapping the trunk or the cut stem of an unopened flower cluster of various palms of the Old World tropics; and Mexican pulque, similarly obtained by tapping the flower stem of a large century plant. Wines obtained by the fermentation of the juice of a large variety of fruits, chief of which is of course the grape, seem almost natural and simple plant products compared with the "piwarri" made by the South American Indians by fermentation of the masticated tubers of cassava, the "awa" of the South Sea Islanders from the macerated roots and stems of a pepper plant, or the "chicha" of the Peruvian Andes from macerated plantains. The more common as well as a few unusual distilled liquors occupy one-half of this case. With each is shown the respective plant material from which it is prepared. Specimens for this exhibit were contributed by several individuals, and firms. Among them may be especially mentioned Mr. W. T. Pope, of Hawaii Agricultural Experiment Station at Honolulu, Hawaii; Mr. D. J. Steinheimer, of St. Louis, Missouri; Messrs. I. Lenard, Robert Yule, and John Mangelsen, of Chicago; Lionel Distilled Products, Inc., Atlas Brewing Company, and Paramount Liquor Company, Chicago.

In the coffee exhibit several samples which had been on display for many years were replaced by new specimens of the exchange standards of Brazilian and Colombian coffee furnished by the New York Coffee and Sugar Exchange.

Further additions were made to the North American trees in Charles F. Millspaugh Hall (Hall 26). At the northwest end of the hall there was installed an exhibit, occupying one entire case, of sugar pine. The material used for this installation was obtained through the cooperation of Professor Emanuel Fritz, of the University of California at Berkeley, and was in part contributed by him personally. Other new exhibits completed are of ponderosa pine, the gift of Edward Hines Lumber Company, Chicago; of southern white cedar, material for which was furnished by the Richmond Cedar Works, Richmond, Virginia; and of Osage orange.

An attractive addition to the foreign woods in Hall 27 is a group of seven boards representing important timbers of the Republic of Honduras, a gift from the United Fruit Company of Boston. Of the large collection of Japanese woods, which have been on exhibition for several years, one case was refinished and reinstalled.

To the plant raw materials and products in Hall 28 there was added a case displaying specimens of the principal species of rubber obtained from widely separated regions of the world. These are arranged in two groups: one showing the steps in the production of smoked and vulcanized sheets from latex of the Para rubber trees; the other including samples of various other species, mostly of lesser commercial importance, or of more restricted industrial application, such as hule or guayule rubber from Mexico, balata from Peru, Ceará rubber from northeastern Brazil, Accra or African rubber, gutta-percha and Jelutong rubber from Malaya, Assam rubber, and finally a Colorado rubber plant as a representative of the various North American species which yield latex containing rubber.

DEPARTMENT OF GEOLOGY

EXPEDITIONS AND RESEARCH

Collecting for the Department of Geology in 1934 was limited to short expeditions by members of the staff, which were conducted without appropriation by the Museum for expenses.

Associate Curator Elmer S. Riggs spent sixteen days in Nebraska and South Dakota collecting vertebrate fossils and examining prospects for future collecting. He also made two short trips within Illinois for the same purpose. Mr. Phil C. Orr spent a day

and a half in Kentucky collecting cave material. Assistant Curator Sharat K. Roy spent five weeks in the field at Peru, Nebraska, and near Lancaster, Pennsylvania. He carefully avoided collecting material which would duplicate any already in the Museum and collected only specimens to fill gaps in the present collections. Eighty-two specimens were gathered: twenty-one from the Pennsylvanian of Nebraska, and sixty-one trilobites from the Lower Cambrian of Pennsylvania. Three of the specimens from Nebraska represent a hitherto unknown crustacean. The Cambrian collection from Pennsylvania has not yet been worked over but it is known to include several perfectly preserved trilobites.

Studies and descriptions of specimens collected by the Marshall Field Paleontological Expeditions to South America were continued through the year by Associate Curator Riggs and Assistant Bryan Patterson. Some of the results were incorporated in a memoir on a new marsupial sabertooth by Messrs. Riggs and Patterson, which was published in the *Transactions of the American Philosophical Society*. Other results appeared in four octavo papers written by Mr. Patterson and published by the Museum.

Assistant Curator Roy wrote a memorial of the late Dr. Oliver Cummings Farrington, former Curator, with a complete bibliography, which was published in the *Proceedings of the Geological Society of America*. He also prepared or worked on the preparation of five other papers during the year. Three of these, *New Silurian Phyllopodous Crustaceans*, *A Silurian Conularia with Internal Septa*, and *The Grinnel Glacier*, are to be published by the Museum early in 1935. Mr. Roy has also continued work on his *Geology and Paleontology of Southeastern Baffinland*.

Research by Assistant Curator Roy intended to refute or confirm the reported discovery of living bacteria in stony meteorites by Dr. Charles B. Lipman of the University of Southern California, was continued through the year and is now nearly finished. Unforeseen delay in completing this work was caused by difficulty in verifying the sterilization of the external surface of the meteorites. A peculiar precipitate which simulated bacterial growth appeared on the surfaces. This growth is now known to be a chemical precipitate derived from a mineral peculiar to meteorites, so that the work is now nearing completion. As usual, thin and polished sections of fossils for identification and research were made in the laboratory.

Miss Elizabeth Oliver, volunteer assistant in paleobotany, began the identification and classification of the collection of fossil leaves



PANAMA HAT PALM

Hall of Plant Life (Hall 29)

Reproduced in Plant Reproduction Laboratories, Department of Botany of the Museum,
from material collected in South America by the Stanley Field
Guiana Expedition, 1926

of Mesozoic Age. This is a collection of approximately a thousand excellently preserved specimens obtained at different times from several sources. The best part of it, recently collected by Assistant Patterson, has never been named, and for much of the older material identification is doubtful or absent.

Dr. Alfred Walcott, working in the Department under a special arrangement, began a detailed study of a peculiar deposit of diamond in a hard matrix of lazulite and cyanite on specimens collected by Dr. B. E. Dahlgren, Curator of Botany, in Brazil. This is an important research as it may throw some light on the puzzling question of the origin of the diamond.

During an extended leave of absence Assistant Patterson made studies of vertebrate fossils in the British Museum of Natural History and the Museum of the Royal College of Surgeons in London for comparison with specimens now being studied in the Department.

Tests and analyses required for identifications of minerals, alloys, and glazes were conducted in the chemical laboratory as usual. In addition many such identifications were made by Dr. Walcott by microscopic and optical methods. Possible solvents for matter which was clogging the downspouts from the Museum roof were investigated and a suitable solvent found. There was carried on in the laboratory an investigation of a proposed degreasing method for use in the preparation of zoological specimens. The alcohol used to preserve specimens of fish and reptiles had become muddy and much discolored so that it was no longer suitable for use. An elaborate study was made of possible methods of purifying the alcohol enough to allow its continued use. The result of the investigation showed that the only practical means was redistillation. A still of six gallons' capacity was installed in the laboratory and has been in constant operation since July. As the odor of the alcohol which has been for years in contact with dead fish and reptiles was exceedingly offensive, equipment was devised which traps this odor and conducts it out of the building. The product of the still is a clear, colorless liquid entirely suited for its intended use although not sufficiently pure for many other purposes. Towards the close of the year the laboratory, except for the still, was entirely dismantled for repainting, but it is expected that it will again be in use by the beginning of 1935.

Recording a collection of culture and Oriental pearls, received from Japan, in such a way that the individual pearls could be surely identified if they should become separated from their labels, presented

something of a problem, as it is impossible to paint identifying numbers on them without destroying their value. The problem was solved by carefully measuring each pearl and weighing it on the chemical balance, so that if the pearls ever became mixed they could be sorted out by re-measuring and re-weighing.

Members of the Department staff contributed eleven signed articles and twenty-seven other notes to *Field Museum News*; and supplied data used in thirty newspaper publicity articles. Requests from correspondents and visitors for information and identification of specimens came in larger numbers than usual. There were 443 visitors and 296 correspondents referred to the Department for these and similar services.

ACCESSIONS—GEOLOGY

During the year the Department of Geology received seventy accessions comprising 1,458 specimens. Of this number 1,178 were gifts, 105 were received through exchanges, six were purchased, and 169 came from Museum expeditions or were collected by members of the staff. Specimens received by gift included many above average in quality and value.

The most important gift of the year was a collection of culture and Oriental pearls presented by Mr. Kokichi Mikimoto, of Tokyo, Japan. This consists of thirteen culture pearls artificially propagated in pearl oysters and selected to show a range in color and size. For comparison the culture pearls are accompanied by six natural Oriental pearls. Included in the gift is a partially dissected pearl oyster, and several pearl oyster shells with brilliant mother-of-pearl interior surface.

An important and attractive addition to the collection of ornamental minerals is a statuette, nine inches high, presented by R. Bensabott, Inc., of Chicago. This figure of a man in Japanese costume is carved from a block of crocidolite, or tiger-eye, a mineral noted for its brilliancy and the glowing golden silky sheen of its polished surface.

Gifts of ores and minerals exhibited at A Century of Progress exposition were received from four of the exhibitors. The largest of these was a collection of thirty-two ores and industrial minerals of Alaska presented by the Alaska Museum, of Juneau. These specimens, representing a widely diversified range of mineral resources in the territory, are a valued addition to the economic collections as Alaska had been represented mostly by gold and tin ores. The Luray Caverns Corporation presented two large stalactites and three

stalagmite formations from the Luray Cave, in Virginia. The specimens were accompanied by six large colored transparencies which adequately represent the peculiar and beautiful scenery of the caverns.

The United States Potash Company, New York, selected from its exhibit at A Century of Progress and presented to the Museum two large blocks of the potash salts from its mine near Carlsbad, New Mexico. This important newly found deposit which extends over parts of Texas and New Mexico had hitherto been represented only by a few small specimens. As the deposit, which resembles the celebrated deposit at Stassfurt, Germany, is of a kind not hitherto exploited in this country, its adequate representation in the collections is important. The Missouri Commission to A Century of Progress presented good examples of the curious blossom rock found in Missouri, and some iron ores.

The large collection of ores of the state of Washington presented last year by the Northwest Mining Association, which was loaned back to the association for exhibition during the second season of A Century of Progress, was returned and is now included in the economic collections.

Many visitors to A Century of Progress brought material from home to be identified, and they presented many of the specimens which proved to be good museum material. Some visitors presented specimens to improve the showing from their home towns, and exchanges were arranged with other visitors.

Mr. William J. Chalmers, of Chicago, presented fifteen specimens of gold ore and nuggets which are of historical interest because they were collected during the gold rush to California in 1849. Mr. Franklin G. McIntosh, of Beverly Hills, California, presented a large, well-crystallized colemanite from Nevada and seven California minerals.

A large block of wood opal from a petrified forest in Oregon, the gift of Messrs. Robert Sloane and A. R. Renner, of Klamath Falls, Oregon, is a striking addition to the opal section of the mineral collection. Although this specimen, which weighs fifty pounds, lacks the fire of precious opal, the wide range of colors it displays and its soft luster make it a most attractive product of the fossilization of wood. Four wood opal specimens of a different kind, presented by Mr. Thomas A. Carney, of Portland, Oregon, display some features of unusual interest. Another example of fossil wood and five fossils were presented by Mr. L. W. Buker, of Provo, South

Dakota. Another wood opal from Texas, and a smaragdite, were obtained from Mr. C. S. Brock, of Houston, Texas, in exchange for wood opal from another locality.

A specimen of the unusual agate of Datil, New Mexico, was given by Mr. Edward M. Brigham, of Battle Creek, Michigan, and a good group of the Arkansas rock crystals was presented by Mr. J. A. Bauer, of Hot Springs, Arkansas.

Mr. Frank Von Drasek, of Cicero, Illinois, added to his gifts of previous years a collection of thirty-three minerals from Hot Springs, Arkansas. Mr. William Gardner, of Chicago, presented a collection of twenty-seven minerals and forty-five fossils from various localities, which contains much material of interest.

Twenty-seven choice minerals were added to the Museum collections in Hall 34 through two exchanges with mineral collectors. Twenty-one of these came from Mr. E. Mitchell Gunnell, of Galesburg, Illinois, in return for fourteen minerals from the Museum, and six from Mr. Fred Pough, of St. Louis, Missouri, were received in exchange for eight from the Museum.

Twelve specimens were added to the meteorite collection by exchange. Specimens of six falls not hitherto represented were obtained from Professor H. H. Nininger, of Denver, Colorado, in return for ten meteorite specimens from the Museum. Better representation of meteorites from the craters of South Australia and of the great Hoba Farm meteorite were secured from the Kyancutta Museum, of South Australia, which received in exchange four meteorite specimens.

Additions by gift and exchange to the collections in Clarence Buckingham Hall (Hall 35) illustrating structural and dynamical geology were greater in value but fewer in number than usual. The two accessions of most importance were the collection of cave products of the Luray Cavern already mentioned, and a collection of Hawaiian lavas. These lavas and volcanic products, which will effect a great improvement in the appearance and interest of the exhibits, were obtained from Mr. Edward Brigham, of Battle Creek, Michigan, as an exchange for a small selection of minerals. They form a large collection, unusually well selected, representing all phases of the lavas of the Hawaiian Islands, including such features as peculiar lava surfaces, lava stalactites, and the fibrous Pele's hair.

The claystone collection was enlarged by a gift from Mr. Charles Marriott, of Sault Ste Marie, Michigan, of forty-eight claystones selected for their imitative shapes. Miss Virginia Lee, of Ableman,



GROUP OF FOSSIL EDENTATES FROM THE PLIOCENE OF ARGENTINA

Ernest R. Graham Hall (Hall 93)

This exhibit includes skeletons of the ground sloth *Prosebelianus*, and of the glyptodont *Scelerosylvius* mounted with accessories and background

Prepared by Phil C. Orr

Wisconsin, presented a collection of fulgurites from Wisconsin. From Mr. J. O. Shead, of Norman, Oklahoma, was received a gift of nine of the curious barite roses found in his state. Mrs. T. R. Jones, of Ashland, Nebraska, presented examples of dendrite tracings on novaculite, and Mr. John A. Manley, of New Brunswick, New Jersey, presented two limonite geodes of an unusual kind.

The most important addition to the economic collections was a series of thirty-seven specimens from an unusual lead and zinc deposit of Embreeville, Tennessee, the gift of Mr. Seymour Wheeler to be credited to his father, the late Mr. Charles P. Wheeler, of Chicago, who discovered and developed the deposit. These specimens of ore have the appearance of stalactites, stalagmites and various cave floor and wall deposits which in ordinary caves are composed of carbonates of lime and gypsum. Because of their interest and beauty they have been exhibited by themselves in an individual case in Frederick J. V. Skiff Hall (Hall 37).

Three specimens of the radium and silver ores of Great Bear Lake, Canada, the gift of the El Dorado Gold Mines, Ltd., permit for the first time a representation of this important radium deposit.

Mr. Jack Weil, of Chicago, presented sixteen specimens of miscellaneous ores from Colorado. A typical specimen of rich telluride gold ore, the gift of Wright-Hargreaves Mines, Ltd., Kirkland Lake, Ontario, Canada, permits a better representation of the unusual ores of that district.

A polished slab of Mexican onyx from Wisconsin, the gift of Mr. Edward B. Sylvanus, of Chicago, is an interesting addition to the marble collection as it is from a quarry much nearer Chicago than the usual sources of this ornamental stone.

Mr. Henry Field, of Chicago, presented a collection of sixty fossils from Germany and England. Numerous examples of the well-preserved fossil fish of Solenhofen were included, as well as excellent examples of English invertebrates. The fossils were accompanied by a collection of English ores and rocks.

An interesting addition to the fossil collection was a group of twelve fossils of pre-Cambrian age which Mr. Carroll Lane Fenton, of West Liberty, Iowa, collected in Glacier National Park and presented to the Museum. Fossils of so early an age are necessarily poorly preserved but they are very rare and come from a time nearer the beginnings of life than do the fossils usually seen in collections. These fossils were accompanied by twenty-seven other specimens of geological interest, such as impressions left on the

beach sands by the raindrops and hailstones of storms of this remote period.

Mr. Floyd Markham, of Chicago, and Messrs. J. Mann and J. Lee, of Oak Lawn, Illinois, presented twenty-one fossils which they collected in recently discovered beds in Blue Island. These specimens include new species and specimens which disclose unknown or obscurely known features of other species. Several of them have already been described in Museum publications. Messrs. A. G. and Raymond B. Becker, of Clermont, Iowa, presented a collection of eighty-one fossils from Florida.

Additions to the collection of vertebrate fossils resulted from gifts, exchanges, and collecting by individuals of the staff. One skull each of the large Cretaceous dinosaurs, *Anchiceratops* and *Edmontosaurus*, were received by exchange with the Royal Ontario Museum of Toronto, Canada, in return for a miscellaneous collection of South American fossils.

A specimen of the swimming reptile, *Tylosaurus*, was presented by Mr. G. M. Barber, of Hot Springs, Arkansas. A specimen of *Elephas boreus*, from Alaska, was the gift of Mr. George W. Robbins, of Valdez, Alaska. Mr. Henry Field, of Chicago, presented vertebra, jaws, and teeth of *Ichthyosaurus*, from England.

A collection of eleven specimens of fossil mammals and reptiles from South America was contributed by the Standard Oil Company of New Jersey. A skull of *Caenopus* and half a skeleton of *Metamyndon* were collected in South Dakota by Associate Curator Riggs. The Straus West African Expedition of the Department of Zoology collected five specimens of African lavas.

An iron ore from the Fiji Islands, collected by the Cornelius Crane Pacific Expedition, was received, as well as a bentonite (used as a cosmetic by the Arabs) collected by the Field Museum Anthropological Expedition to the Near East.

Mr. Roy collected, on two field trips, eighty-three fossil invertebrates and plants of Nebraska and Pennsylvania. Mr. Phil C. Orr collected sixty-two specimens of cave products and fossils from the cave region of Kentucky.

CATALOGUING, INVENTORYING, AND LABELING—GEOLOGY

New entries recorded in the Department catalogues, now comprising twenty-six volumes, numbered 1,458. These, added to previous entries, give a total of 193,278. As copy for several thousand labels already had been sent to the Division of Printing, preparation

of copy for new and replacement labels was not as actively pushed as was the case last year. However, copy for 170 labels was prepared and sent to the Division of Printing. In order to afford information regarding the exhibits before permanent labels are ready, 455 temporary typewritten labels were prepared and installed. Labels totaling 1,812, received during the year from the Division of Printing, were installed. Two hundred thirty-eight photographic prints were added to the Department albums, bringing the total number in them to 7,736. Labels for all prints were made and filed with them. Three hundred eighty-four United States Geological Survey maps were received, filed and labeled, making the number of these maps now available 4,232.

It has become increasingly evident during the past few years that a classified catalogue of at least some of the collections is a necessity. When arranging exchanges or purchases, planning improved or new exhibits, or answering questions from scientific workers, it is often necessary to know whether the collections include a certain kind of specimen. The regular catalogue is useless for this purpose because in it entries are necessarily chronological in order, and only the broadest classification is possible. In the past, dependence has been upon memory supplemented by an orderly arrangement of both exhibited and reserve collections. The collections are now so large that memory is no longer dependable, and a search of even a well-classified reserve collection often involves the expenditure of a prohibitive amount of time. The preparation of the most necessary of these catalogues, now well under way, has absorbed much of the Department staff's time. The work has been facilitated by the use of clerical assistants, assigned by the Illinois Emergency Relief Commission, who have been able to do much of the typing and routine work. A card catalogue, arranged alphabetically, of all meteorites received since the date (1916) of the last printed catalogue, has been completed and is in use. A catalogue of the mineral collection, arranged in the order of the Dana system numbers, has been started, and 2,810 cards have been made, checked, and filed. These cards tell the Dana number, catalogue number, name and locality of each specimen, and when, how and from whom it was acquired. They also give the approximate size and such other description as the cataloguer is able to supply. As the catalogue, when complete, will contain at least 16,000 cards, it will be a matter of some years before it is finished. There is special need for a catalogue of the nearly 8,000 geological photographs in the Depart-

ment albums. Most of the data concerning these photographs have never been recorded, and exist only in the memory of the staff. Each photograph may be used to illustrate a number of geological subjects. A laborious search of the albums to find a suitable illustration for some subject is often necessary. The catalogue begun this year, now nearly finished, contains this hitherto unrecorded data and is thoroughly cross-indexed for geological subjects. In some cases as many as five cards have been written for a single print and most of the prints are represented by at least two cards, one geographical and one or more geological. The standard Dewey decimal classification was used and found satisfactory. A quick reference to the card index shows at once what photographs are available from any country and what illustrations there may be of any geological feature such as jointing or lava flows.

A catalogue of all exhibited invertebrate fossils and plants has been completed and is in use. The cards give the Museum number of each specimen, with its name, horizon, and geographical location. They are grouped by geological periods and under each period the cards are filed alphabetically by genera. This catalogue contains 5,378 cards. A similar catalogue for the reserve fossil specimens has been started and some 700 cards written.

A catalogue of approximately two-thirds of the specimens of vertebrate fossils, which was already in existence, was enlarged by the addition of forty-nine cards. This catalogue is on larger cards than the other catalogues, and is much more detailed. It contains the entire history of each specimen and such other information as may be considered pertinent.

The steady growth of the library of pamphlets and separates on the subject of vertebrate paleontology made it necessary to provide better means of preserving and using this literature. Accordingly 2,100 pamphlets and unbound volumes were filed in 133 covers made in the Department and arranged and marked alphabetically by authors. A catalogue of 1,641 cards was made for this library. A similar catalogue of cards was prepared for the literature on invertebrate paleontology, and a special catalogue for a special bibliography of paleontology and geology of Baffinland. All catalogue cards except those of vertebrate paleontology specimens are on standard library size cards. To accommodate them five small filing cabinets to fit in spaces in the Department bookcases were made in the Department workrooms. These cabinets are twenty-two inches long, fourteen inches high and twelve inches deep. Each



CRYSTAL OF BERYL

Stanley Field Hall

This large crystal weighs 950 pounds

Gift of William J. Chalmers

contains six drawers. These small cabinets are found more convenient in use than a single large one and obviate the necessity of providing filing capacity long before it is needed.

Illinois Emergency Relief workers assigned to the Department prepared more than 13,500 catalogue cards, numbered more than 1,600 specimens, and completed large amounts of typing on work of various kinds. From two to six of these workers served the Department during about thirty weeks of the year.

INSTALLATIONS AND REARRANGEMENTS—GEOLOGY

As was the case last year, exhibits in the Department were disturbed as little as possible during the period of A Century of Progress exposition, and there were no major changes.

The change in the method of mounting minerals in the tall cases of Hall 34, inaugurated last year, was finished by the complete reinstallation of six more cases, and reinstallation of the minerals on the top shelves of ten others. Eighteen hundred of the new type wooden specimen mounts, made in the Department workshops, were employed in this hall, and in similar work in progress in Clarence Buckingham Hall (Hall 35). The new installation is so much more economical of space that several hundred specimens, partly from reserves and partly new accessions, have been added to the exhibits without producing a crowded effect.

The four cases near the center of Hall 34 which contain the William J. Chalmers Crystal Collection, the amber collection, and the ornamental minerals, are equipped with narrow glass shelves on which it has been difficult to maintain the installation in good shape, as any vibration moved both specimens and labels out of position. The specimens have all been remounted and the pedestals have been attached to the glass shelves by a touch of adhesive, invisible and easily removed. The special wire label holders formerly used were somewhat unsightly and never held the labels securely. A new type of steel label holder, which is practically invisible and holds the label firmly, was designed and built in the Department workrooms. One thousand of these were used in the reinstallation.

In Clarence Buckingham Hall (Hall 35) three cases of concretions and four cases illustrating various phases of structural geology were reinstalled. Here it was not possible to use the new type of mounts for all specimens, and many were therefore remounted on types of supports already in use, while some of the larger specimens required special treatment. As in the mineral collection, the new installation

proved more economical of space, and several hundred additional specimens were placed on view. A new exhibit, consisting of specimens collected by the Marshall Field North Arabian Desert Expedition, was installed in this hall to illustrate the destructive action of the sun on rock surfaces. The collection illustrating such surface desert phenomena as desert varnish, sand polish, and erosion by wind-blown sand, was revised and greatly enlarged by the addition of specimens from the Marshall Field North Arabian Desert Expedition and the Marshall Field Brazilian Expeditions. The exhibits of claystones and barite roses were enlarged by the addition of specimens received during the year.

Work on the collections in Frederick J. V. Skiff Hall (Hall 37) was confined to such cleaning as was necessary and the addition of a few specimens received during the year. The appearance of the hall has been improved by replacing 1,743 of the old black labels with new buff labels matching the background of the cases. The collection of unusual zinc and lead ores from Embreeville, Tennessee, was installed in a case formerly occupied by a collection of zinc ores from Greece, now transferred to another part of the hall. The new collection, which occupies a whole case, is unusually attractive because the specimens take the form of cavern deposits such as stalactite and stalagmite.

Two large blocks of the potash ores of New Mexico are an important addition to the potash collections, as they show the nature of this deposit better than the drill cores formerly shown.

In Ernest R. Graham Hall (Hall 38) fossil skulls of the saber-tooth tiger, *Smilodon*, the Andean horse, and a giant turtle were added to the collections. Further changes were confined to minor readjustments such as replacing inferior specimens, and rearranging specimens that were not in proper geological sequence.

Preparation of specimens for exhibition continued through the year in the laboratories of vertebrate paleontology. The working force of this laboratory was increased during part of the year by the re-employment of Mr. James H. Quinn as preparator for eight months, and by the attachment of Mr. Robert Witter as volunteer helper for four months. Specimens prepared for exhibition, and in process of preparation, in these laboratories, while few in number are of great importance. A skeleton of the large South American mammal, *Astrapotherium*, has been reconstructed from a poorly preserved specimen and for the first time the entire bony structure of this rare animal has been shown. Another rare skeleton, of a

kind never before exhibited in any North American museum, is that of the great sloth, *Megatherium americanum*, which has been prepared and is nearly ready for exhibition. An entire skeleton of the rare Paleocene mammal, *Titanoides faberi*, was removed from a stony matrix of great hardness and prepared for study and for mounting later as an exhibit. Two fine specimens of great tortoises, consisting of the shell and large parts of the skeleton, have been prepared and mounted for exhibition.

In H. N. Higinbotham Hall (Hall 31) there was installed a collection of specimens of culture and Oriental pearls, the gift of Mr. Kokichi Mikimoto, of Tokyo, Japan. Materially enlarging the pearl exhibit, this collection contains culture pearls of the kind grown artificially in pearl oysters in Japan, along with a number of Oriental or natural pearls for comparison. It is accompanied by a pearl oyster with one shell removed to show the interior where pearls grow.

Two gold nuggets received during the year were added to the native gold collection, and some inferior jade was replaced by specimens of better quality.

The rearrangement of the mineral and economic reserve and study collections in trays in Room 120, which was undertaken last year, has already proved its worth. Use during the year of the reorganized collection indicated that a closer geographical classification of some sections of the economic collection would facilitate ready reference to them. The geographical classification of the gold, silver, and lead ores was already sufficiently detailed. All the other ore and non-metallic mineral collections now have been rearranged in as close geographical sequence as the nature of the material will permit. As the specimens in this room are reserve and study collections, not merely storage material, and are frequently referred to, the new arrangement has effected a worth-while economy of the time of the staff.

DEPARTMENT OF ZOOLOGY

EXPEDITIONS AND RESEARCH

Two important zoological expeditions, organized and initiated near the close of 1933, were in the field during 1934. These were the Straus West African Expedition of Field Museum and the Leon Mandel Guatemala Expedition of Field Museum, both of which were mentioned in the Annual Report for 1933.

The Straus West African Expedition was accompanied during February, March, and April by its patroness, Mrs. Oscar Straus, of

New York. The expedition was under the leadership of Mr. Rudyerd Boulton, Assistant Curator of Birds. It sailed from New York in January direct for Dakar, Senegal, on the west coast of Africa. In addition to Mrs. Straus and Mr. Boulton, the party included the following: Mr. Frank C. Wonder, of the Museum's taxidermy staff, who collected mammals; Mr. John F. Jennings, of Chicago, who was in charge of photography; and Mrs. Rudyerd Boulton, who made studies of African native music under a grant from the Carnegie Corporation of New York.

The expedition left Dakar by motor early in February and made its first camp at Fatick, about 100 miles inland on a brackish arm of the sea. Thence it moved on about 700 miles to Bamako, capital of the French Sudan. Mr. Wonder, at this point, began working back to the coast, collecting mammals and birds, while the rest of the party continued to Mopti, on the Niger River, where a great abundance of water birds was found. The expedition then moved to Sangha and to Gao. From there Mrs. Straus and Mr. Boulton motored across the Sahara Desert to Oran, Algeria, whence Mrs. Straus returned to the United States. The journey to Oran and the return to Gao, some 3,000 miles largely over waterless, uninhabited desert, was a difficult one.

After a trip to Timbuktu, the expedition journeyed south through Dahomey and Nigeria to Mount Cameroon, a 13,000-foot, isolated peak near the coast, where several weeks were spent in intensive collecting and in making ecological and zonal studies from sea level to the treeless summit. Later, a stop was made in lowland forests of southern Nigeria.

Results from this expedition include much material new to the Museum, since the route traveled was wholly in a part of Africa little represented in American collections. The material obtained comprises specimens and accessories for two habitat groups of birds, one of a nesting colony of weaver-birds, and one of the curious plantain-eaters or turacos of the mountain forest; and general collections of 641 mammals, 650 birds, 1,000 reptiles and fishes, 2,000 insects, 1,000 still photographs, and 15,000 feet of motion pictures.

The work of the Leon Mandel Guatemala Expedition of Field Museum, which was well under way in 1933, and of which a preliminary account appeared in last year's Report, was carried to a successful conclusion. In December, 1933, the field party (consisting of Mr. Karl P. Schmidt, Assistant Curator of Reptiles and Amphibians; Mr. Emmet R. Blake, of Pittsburgh; Mr. F. J. W.



BONGO ANTELOPE

Carl E. Abney Memorial Hall (Hall 22)

Specimens collected by Harold White-John Costa African Expedition, 1936
Taxidermy by C. J. Allrecht. Background by Charles A. Corwin



Schmidt, of Madison, Wisconsin; and Mr. Daniel Clark, of Chicago) had established headquarters at Tiquisate, a plantation of the United Fruit Company, on the Pacific plain of Guatemala. There they were joined by Mr. Leon Mandel, of Chicago, sponsor of the expedition; Dr. M. G. Kral, accompanied by Mr. Henri Bogner-Mayr as general assistant, both of Chicago; and Mr. Richard Madler, of New York, photographer. The main party was engaged in hunting, in collecting birds and reptiles, and in photography for ten days on the seacoast below Tiquisate, while Mr. F. J. W. Schmidt collected mammals and reptiles at Olas de Moca, the coffee plantation of Mr. Teodoro Englehardt, where later the entire party was cordially entertained.

After arranging for the shipment of a number of live animals obtained for the Chicago Zoological Society, the party returned to Guatemala City, and Mr. Mandel visited the highland village of Chichicastenango. He was recalled to Chicago on account of the sudden death of his mother on January 20.

Messrs. Karl P. and F. J. W. Schmidt, and Mr. Blake collected at Santa Elena, a high mountain station near Tecpam, in January and early February. They were entertained by Mr. Axel Pira, whose sawmill, in the cypress forest at an altitude of 9,500 feet, had been a collecting station for Field Museum collectors in 1905 and 1906. From Santa Elena, they traveled by motor truck over the highland to San Marcos, where they had been invited by Mr. H. Goebel, of the Central American Plantations Corporation, to make the great coffee plantation "El Porvenir" their base for the zoological exploration of the Volcan Tajumulco, the highest mountain in Guatemala. Collections from El Porvenir, made at 3,400 feet, and from camps at 7,000, 10,400 and 13,000 feet, will form the basis for detailed studies of the extremely interesting and well-defined life zones of this great mountain.

Subsequent collecting stations, chosen to represent the diverse environmental regions of Guatemala, were at El Rancho, in the desert along the Motagua River; Salama, the high desert of Baja Vera Paz; the limestone cave region of Alta Vera Paz, in the vicinity of Coban; and the lowland forest on the Caribbean side, revisited before sailing from Puerto Barrios to New Orleans.

Notable among results of the Leon Mandel Guatemala Expedition is the exhibition material collected for three groups of birds for the proposed Hall of Foreign Birds. Two species of toucan, representing one of the most distinctive groups of birds in tropical Amer-

ica, were found feeding in great numbers on a forest tree with small blue fruits in the lowland forest near Puerto Barrios, and an ample series of specimens, together with photographs and plant accessories, was obtained. In the cloud-forest zone of Tajumulco, the rare and exceptionally brilliant trogon called quetzal was collected. This is the national bird of Guatemala, now protected by the government, and special permission was granted the expedition to take specimens for exhibition in Field Museum. These will be mounted in association with a branch hung with orchids and other epiphytic plants, and shown against a background of tree ferns, representing the typical habitat of the quetzal. The third group will demonstrate the nesting habits of the giant oriole of Central America whose hanging nests, from four to six feet in length, are grouped in colonies of hundreds in the tallest, most conspicuous trees, forming one of the characteristic elements in the tropical landscape.

Scientific collections obtained by the expedition will make possible important contributions to the knowledge of Guatemalan mammals, birds, reptiles, and amphibians. The total collections include 523 mammals, 876 birds, 1,003 amphibians, 844 reptiles, 125 fishes, and 1,621 insects and other invertebrates. Mr. Clark, who contributed his own time and expenses to the expedition, presented to Field Museum the 176 birds he collected.

The Field Museum Anthropological Expedition to the Near East, conducted by Mr. Henry Field, Assistant Curator of Physical Anthropology, and Mr. Richard Martin, in addition to its work for the Department of Anthropology, made valuable zoological collections, including 142 mammals, some 50 birds, and 559 amphibians and reptiles.

A limited amount of research was carried on, but this was curtailed by absences in the field and increased curatorial requirements.

Assistant Curator Colin C. Sanborn made a preliminary study of the mammals obtained by the Leon Mandel Guatemala Expedition, among which several new forms were discovered and, throughout the year, from time to time, he made additions to an index of the literature pertaining to the bats of the suborder Microchiroptera.

Associate Curator Charles E. Hellmayr, working in Vienna and elsewhere in Europe, made much progress with the large work *Catalogue of Birds of the Americas*. Part VII, a book of some five hundred pages, was corrected and published, the manuscript for Part VIII was finished and sent to press, and preparation of Part IX was concluded.

After his return from Guatemala, Assistant Curator Schmidt engaged in research on Chinese amphibians and reptiles, continuing a collaboration begun in May with Dr. C. C. Liu, of Soochow University, China. The gift of an especially valuable series of snakes from Yucatan, by Mr. E. Wyllys Andrews IV, of Chicago, made possible a comparative study of Yucatecan and Guatemalan species, and a report on the collection made in Yucatan by Mr. Andrews was drawn up for publication. Mr. Schmidt also prepared a short paper on the breeding behavior of lizards and another describing a new crocodile from the Philippines.

Except for the important addition mentioned above to the series on birds of the Americas, the only other publication of the Department of Zoology during the year was Zoology Leaflet No. 13, *Sculptures by Herbert Haseltine of Champion Domestic Animals of Great Britain*, in which are illustrated and described the sculptures presented by Trustee Marshall Field and installed in the new Hall 12 during the year.

Members of the Department staff contributed eleven signed articles and twenty-two other articles and items to *Field Museum News* during the year, and supplied data for thirty-six newspaper articles.

A few publications of members of the staff appeared under other than Museum auspices. Most important of these are the *Genera and Subgenera of South American Canids*, by Dr. Wilfred H. Osgood, Curator of the Department of Zoology, published in February in the *Journal of Mammalogy*, Vol. 15, pp. 45-50; and *Notes on the Sea Trouts of Labrador*, by Assistant Curator Alfred C. Weed, printed in *Copeia*, 1934, pp. 127-133.

As in 1933, the work of the Department of Zoology was somewhat affected by A Century of Progress exposition and the unusual attendance resulting from it. The number of visitors of a professional character or coming with special introductions and requests for service from members of the staff was less than in 1933, but still large, and much time was unavoidably devoted to them.

The association of Mr. Leslie Wheeler, a Trustee of the Museum, with the Department of Zoology during the year made a gratifying addition to the personnel. Mr. Wheeler has found an especial interest in the Museum's collection of birds of prey, which has been segregated and especially indexed. Preparations have been made for amplifying it and studying it along systematic lines.

The year was marked especially by activities connected with the employment of numerous assistants provided by relief agencies

—the Federal Civil Works Service, the Illinois Emergency Relief Commission, etc. Although many of these men and women were inexperienced and without especial qualifications, they were assigned to work in which they could be trained and they soon became able to render valuable service to the institution. In all cases they were given work which had fallen behind or which the regular staff had been unable to undertake for lack of time. They were not used to relieve the regular staff of any of its usual duties. Through their assistance large numbers of specimens hitherto in storage were prepared, catalogued, labeled, and numbered. General efficiency throughout the Department was greatly stimulated and much substantial progress was made in the care and use of the collections. Supervision of their work occupied much of the time of the regular staff, but the net gain was very large.

ACCESSIONS—ZOOLOGY

Accessions for the year total 10,951, which is about double the number received in 1933. The increase is due, mainly, to more results from Museum expeditions. By zoological groups, the accessions classify as follows: mammals, 1,405; birds, 1,947; amphibians and reptiles, 3,370; fishes, 578; insects, 3,651. The number obtained by Museum expeditions is 7,923; by gift, 2,730; by exchange, 266; by purchase, 32.

Foremost among gifts are the bronze and marble sculptures of British champion domestic mammals, presented by Trustee Marshall Field. These consist of nineteen pieces by the well-known artist Mr. Herbert Haseltine. Their special installation in a new hall (Hall 12) has been mentioned elsewhere.

Gifts of mammals include a small number of especial interest received from the new zoological gardens at Brookfield, Illinois, through the cordial relations maintained between the Museum and the Chicago Zoological Society. Dr. L. C. Sanford, of New Haven, Connecticut, presented the skin of a bear from Mexico to match a skull given to the Museum in 1902 and used as the basis of the description of a new form (*Ursus machetes*). This, therefore, is a type specimen and the preservation of both skin and skull together is important. Dr. G. W. D. Hamlett, of the Harvard Medical School, presented twenty-three specimens of bats collected in Brazil.

The principal gifts of birds were those received from Mr. Leslie Wheeler, of Lake Forest, Illinois, from time to time, amounting to 303 specimens. Among them were some fifty-five birds of prey and a collection of 248 miscellaneous birds from southwest Africa.



OSTRICHES AND THEIR ALLIES

Hall 21

Type of installation in systematic exhibit of foreign birds

Notable among gifts of amphibians and reptiles, during 1934, are thirty-eight specimens of snakes, lizards, frogs, and turtles from Yucatan, from Mr. E. Wyllys Andrews IV, of Chicago; forty specimens of frogs and lizards from north China, from Dr. C. C. Liu, Soochow University, China; seven snakes from Brazil and Central America, from Mr. R. Marlin Perkins, of the St. Louis Zoological Park, including a rare genus of boa, *Ungaliophis*; a king cobra and an exceptionally large East Indian monitor lizard from Mr. Frank Buck, well-known dealer in live animals; and five snakes and fifteen lizards, chiefly Australian, from the Chicago Zoological Society.

As in previous years, a number of desirable fishes were received from the John G. Shedd Aquarium. The continued friendly cooperation of the aquarium staff has resulted in the selection of especially needed specimens, from time to time, which have filled many gaps in the Museum's collections. A specimen of great interest is an east African lungfish, given by the General Biological Supply House, of Chicago. The Charleston Museum, Charleston, South Carolina, continued to add to its gifts of fishes, especially pickerels, from that state.

The insect acquisitions were unusual in that more than two-thirds of them were specimens from foreign countries such as Guatemala, Colombia, Ecuador, and Arabia. A notable and important gift from Mr. H. St. J. Philby, of Mecca, Arabia, consisted of 1,281 specimens of various insects (particularly small moths and grasshoppers) from Hejaz, Arabia, a country which previously was poorly represented in the insect collection. A welcome addition to the Museum's series of local insects was a donation of 427 specimens, including 327 bees and wasps, received from Mr. Albert B. Wolcott, of Downers Grove, Illinois.

CATALOGUING, INVENTORYING, AND LABELING—ZOOLOGY

The number of zoological specimens catalogued was 15,042, a rather large total as compared with recent years. The entries were divided as follows: mammals, 1,187; birds, 3,416; amphibians and reptiles, 1,772; fishes, 8,667. One thousand skins in the reference collection of mammals were labeled and 300 skulls of mammals were numbered, labeled, and boxed or bottled. Some 8,000 cards were added to the index of mammal specimens, including new cards for all type specimens and all mammals on exhibition. This work was participated in by Illinois Emergency Relief workers and by one volunteer assistant, Mr. Douglas Bruce, who was in regular attendance for seven weeks during the summer months.

Although more than three thousand birds were catalogued, this was incidental to a thorough rearrangement of the collection made possible by the acquisition of new storage cases delivered late in 1933. This rearrangement involved the overhauling of the entire collection, which now numbers more than 100,000 specimens. Everything was placed in systematic order with the exception of several uncatalogued collections which were segregated to be classified and later incorporated in the general collection. Cases containing the birds of prey—eagles, hawks, falcons, owls, and vultures—were arranged so as to be readily accessible and convenient for the studies undertaken by Trustee Leslie Wheeler, whose interest in this subject resulted in his associating himself with the Department of Zoology, taking active charge of this section of the bird collections.

All collections of amphibians and reptiles received during the year were catalogued and much progress was made in the labeling and shelving of identified material. The number of entries made was 1,776, of which 206 were for osteological specimens which were catalogued and placed in order by Assistant D. Dwight Davis. Much help was received from relief workers.

The assistance of relief workers made it possible to catalogue large accumulations of fishes that had been in storage and unavailable for many years. The largest group so handled was the remainder of the extensive collection from Panama and the Canal Zone made in 1911 and 1912. A total of 8,667 entries was made and all specimens catalogued were correctly labeled and assigned to their proper places on the shelves of the reference collection.

Another project carried out in the Division of Fishes was the preparation of a card index of colored plates of fishes contained in the Museum Library. Cards to the number of 7,243 were written, and it is estimated that 1,200 more will complete the index, which will save much time in answering the many calls for information on this subject.

As in the past, for convenience in the Division of Insects, the preceding year's accessions were recorded and indexed for reference by locality, collector, and donor. For the permanent arrangement of the North American beetles, on which the work of assembling, determining, and repinning specimens was continued, 908 name labels were written, and, by means of thirteen new drawers, four families of these insects were made more accessible and useful.

Most of the accessioned insects that required such attention, as well as a number of butterflies that were stored away in papers

for many years, were pinned or spread, and most of them pin-labeled. The number of specimens thus pinned was 2,885. Much appreciated help on this routine work was given in the latter half of the year by a volunteer assistant, Mr. Rupert L. Wenzel, and by Illinois Emergency Relief workers. By means of relief assignments, the Museum's accumulated series of bees, wasps, and parasites were also separated into their proper families, determined specifically in part, and arranged in sixteen new containers.

Entries of skeletal material numbered 367, distributed among mammals, birds, and reptiles. All material of this kind, excepting a few bird skeletons, was catalogued, labeled, and carded so that the records, so far as possible, are up to date. For the first time the individual bones of all disarticulated skeletons were separately numbered. This insures permanent proper association of the bones and avoids troublesome transpositions in handling.

Extraordinary progress was made in cleaning skulls and bones, largely through assistance provided through federal relief agencies. This work had fallen far behind and much valuable material was inaccessible. Most important was the cleaning of more than 1,000 skulls of large mammals which had accumulated over a period of years during which accessions were at a rate higher than the regular staff could meet successfully. In addition, 3,056 small and medium-sized skulls were cleaned and bottled.

A skeleton of a spectacled bear was cleaned by maceration and two other large mammal skeletons were prepared by other methods. Many smaller skeletons were cleaned by dermestids in the dermestid room. Three frog skeletons were prepared from alcoholic specimens.

An echidna, a young orang, and a large Australian tree frog, which were received in the flesh, were prepared for anatomical study by embalming and by injecting the arteries and veins with colored masses. An opossum was embalmed and stored. This highly desirable material forms a nucleus for a synoptic series of vertebrate types, preserved for study of the soft anatomy, which will be an extremely important addition to the collections.

A detailed study was made of the so-called Schultze method of clearing and staining smaller vertebrates to render the skeleton visible without destroying the surrounding tissues. Through specially qualified assistants assigned by relief agencies, much progress was made in applying this process to Museum material. A total of sixty-one excellent preparations, mostly amphibians and reptiles, was made.

To supply the need of specimens to illustrate certain biological facts, there were again loaned to A Century of Progress exposition 116 mounted and unmounted specimens of birds and mammals, and ten fish models. For the duration of the exposition, these specimens were displayed in the biological section of the Hall of Science, where they were used to exemplify speciation, and in exhibits showing world-wide ecological association and undersea life.

INSTALLATIONS AND REARRANGEMENTS—ZOOLOGY

A new hall (Hall 12) was opened in the Department of Zoology for a novel exhibit of nineteen sculptured champion British domestic animals, one-quarter life size. These were modeled from the living animals by the noted sculptor, Mr. Herbert Haseltine. The collection is a gift from Trustee Marshall Field. Among the animals depicted are many of international fame. Notable are the Shire stallion, *Field Marshal V*, from the stables of King George V of England, and the great thoroughbred sire *Polymelus*. The Suffolk Punch breed is represented by *Sudbourne Premier*, the Percheron by the stallion *Rhum*, the polo pony by *Perfection*, and the steeple-chaser by *Sergeant Murphy*, winner of the Grand National in 1923. Cattle are represented by an Aberdeen Angus bull, a Shorthorn bull, a Hereford bull, and a Dairy Shorthorn cow. Sheep and pigs include two Lincoln rams, a Southdown ewe, Middle White boar and sow, and a Berkshire boar. A varied technique adds greatly to the attractiveness of the figures. Some are cast bronze, others chiseled bronze, bronze plated with gold, bardiglio marble, black Belgian marble, Burgundy limestone, and rose St. Georges marble. Although highly realistic, they are also endowed with great artistic feeling.

Unusual progress was made in the production of new exhibits, principally of mammals and birds. Seven large habitat groups of mammals were completed and opened to public view. Much advance was made, also, in the systematic exhibits of birds, five new screens being finished and two others rearranged and transferred to new positions. One bird group, the birds of Bering Sea, was reinstalled with a new background. Of the new mammal groups, five are Asiatic and two African. The addition of the five Asiatic groups to William V. Kelley Hall (Hall 17) nearly doubles the display in that hall, which contained only six finished groups at the beginning of the year. It now has eleven, with space for ten more, five of which are well on the way toward completion. The new Asiatic groups are those of the sambar deer, the swamp deer,



AMERICAN ALLIGATOR AND NEST

Albert W. Harris Hall (Hall 18)

Reproduction in cellulose-acetate by Leon L. Walters

Original specimen and accessories collected by Leon L. Walters and Herbert L. Stoddard

the proboscis monkey, the sloth bear, and the Bengal tiger. The two African groups are those of the aardvark and the bongo, installed in Carl E. Akeley Memorial Hall (Hall 22).

The sambar deer group includes a large stag, a female, and a half-grown young deer in an open space in heavy forest where they are engaged in licking the exudate of the soil at a so-called "salt-lick," a practice common with nearly all deer. The specimens were obtained by the James Simpson-Roosevelts Asiatic Expedition and the late Colonel J. C. Faunthorpe. The group was prepared by Staff Taxidermists Julius Friesser and Arthur G. Rueckert. The background was painted by Staff Artist Charles A. Corwin from original studies made in India by artists employed for the purpose through the cooperation of the Bombay Natural History Society.

The swamp deer group adjoins the sambar, making comparison easy, and emphasizing the contrast in the appearance and habits of the two largest species of Indian deer. Its setting is an open swamp where tall grass in autumn color harmonizes with the brown coats of the animals. A bugling stag stands at one side and three demure females are shown near-by at the edge of a stretch of water. This group also was produced by Messrs. Friesser and Rueckert and the background is by Mr. Corwin. Three of the specimens were taken by the Simpson-Roosevelts Asiatic Expedition and the fourth by Colonel Faunthorpe.

A group of proboscis monkeys, originally prepared by the late Carl E. Akeley and installed in a plain floor case, was successfully rearranged and placed in a large alcove space adjoining the west entrance to William V. Kelley Hall. This was done by Staff Taxidermist Leon L. Pray, who regrouped the animals, painted a suitable background, and, with Assistant Taxidermist Frank Letl, reproduced a treetop scene with artificial branches, leaves, and vines.

The sloth bear group occupies one of the four enclosures which face the center of Kelley Hall. It is the second of four groups of carnivorous mammals planned for these spaces, the first, installed several years ago, being the giant panda group. A family of the curious, long-snouted sloth bears is shown busily engaged in searching for insects among loose stones, roots, and debris of a dry stream-bed or "donga." Included are two adult animals, and a young cub which rides on its mother's back in the fashion habitual with this species. The specimens for the group were received from Colonel Faunthorpe, the grown animals having fallen to his own rifle, and the cub being contributed by an East Indian friend, Mr.

Dilipat Singh. The production of the group was executed by Staff Taxidermist Rueckert, assisted by Mr. Wilmer E. Eigsti. The background is by Artist Corwin.

Of unusual interest is the group of Bengal tigers, opened in Kelley Hall. It occupies one of the larger spaces and makes an imposing appearance. In reference to the character of the animal, the treatment is somewhat dramatic, with the male tiger in a tense and startled position, standing over a fresh kill, while its mate at one side appears as if about to slink away. The background, by Mr. Corwin, depicts light, open forest rather than deep jungle, and the colors are bright and warm. The specimens were collected by the Simpson-Roosevelts Asiatic Expedition. The group was prepared by Staff Taxidermist C. J. Albrecht.

One of the two additions to the exhibits of African mammals in Carl E. Akeley Memorial Hall (Hall 22) is a group of the rare, forest-dwelling bongo, the most distinctly marked and brightly colored of all antelopes. This attractive group includes five excellent specimens of these magnificent hoofed animals—two males, two females, and a fawn—posed in a bamboo thicket, with a background painted by Staff Artist Corwin. These specimens were collected by the Harold White-John Coats African Expedition of Field Museum in 1930, and the group was prepared by Staff Taxidermist Albrecht.

A group of the odd-shaped aardvarks was also completed and installed in Akeley Hall. These peculiar animals feed wholly upon ants and termites, which are abundant in Africa. Notwithstanding their rather large size and weight, they are adept burrowers and hide in their excavations during the day. Being nocturnal in their habits, they are seldom encountered and, therefore, they are rarely represented in collections. The two specimens in this group were obtained by the Harold White-John Coats Abyssinian Expedition in 1929 and were prepared for exhibition by Mr. Albrecht, who was a member of the expedition. One of the animals is shown partly concealed in a reproduction of its burrow; the other is standing on the ground in front of two termite nests.

The systematic exhibit of North American birds in Hall 21 was brought to practical completion by the addition of four new screens and the rearrangement of several others. The new screens include two of grouse and quail; one of doves, pigeons, and terns; and one of cuckoos, swifts, parrots, and hummingbirds. All the important species of birds known from North America north of Mexico are represented in this exhibit and, although it will be subject to inter-

mittent change, substitution, and improvement in future years, it now stands as a unit with no large gaps to be filled. The number of species and subspecies included is 687, represented by 842 individual specimens, and the work is mainly by Staff Taxidermist Ashley Hine, who has devoted his time almost exclusively to it for more than ten years. The synoptic exhibit of foreign birds on the south side of Hall 21 received an important addition in a case of gallinaceous birds prepared by Assistant Taxidermist John W. Moyer. On one side of the screen are shown selected examples of the pheasant family, and on the other are the grouse, quail, and partridges. Among the pheasants are the peacock, the great argus pheasant, and rare and beautiful species such as the blood pheasant, impeyan, and tragopan, as well as the better-known golden pheasant, ringneck, and others kept in aviaries. Among the grouse are the large capercaillie of Europe, the black cock, and other Old World game birds.

A further interesting addition to the foreign birds was a single specimen of a New Guinean cassowary which was placed in the case of ostriches and their allies. It was prepared from a specimen received in fresh condition from the Lincoln Park Zoo. This made it possible to apply the so-called "celluloid" method to reproduction of the highly colored and much carunculated head and neck so characteristic of this bird. All the naked parts, including the legs and feet, were reproduced by this method and attached to the body, which was mounted in the usual way. The result is exceedingly lifelike and doubtless is the most natural and realistic preparation of a cassowary ever exhibited in a museum. The exhibit was prepared by Staff Taxidermist Leon L. Walters.

Two special exhibitions were presented during the year, both in the west half of Hall 20. The first was an exhibition of 473 photographs illustrating results and methods in modern taxidermy. This was the International Exhibition of Taxidermic Art, sponsored by the technical section of the American Association of Museums. The work illustrated included that of some eighty highly skilled taxidermists from Germany, Spain, Switzerland, and the United States, among them several members of the taxidermy staff of Field Museum. The exhibition was on view from April 1 to 15. Later in the year, an exhibition of paintings and photographs was shown in connection with the annual meeting of the American Ornithologists' Union, which was held in the Museum from October 22 to 25. These included the Museum's original paintings of Abyssinian birds and mammals by the late Louis A. Fuertes, and group

photographs of ornithologists from the collection of the late Ruthven Deane, loaned by the Division of Fine Arts of the Library of Congress.

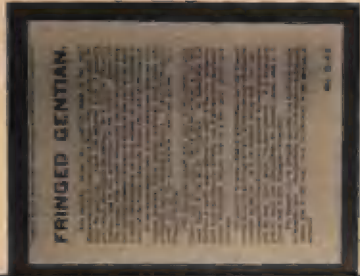
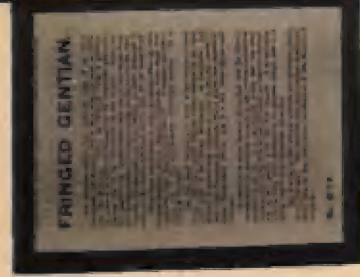
THE N. W. HARRIS PUBLIC SCHOOL EXTENSION

All of the 375 Chicago public schools which were open during 1934 received the services of the Department of the N. W. Harris Public School Extension. This was an increase of forty-two compared with the number served in 1933, accounted for by the opening of two new buildings and the reopening of forty which had been closed. To each of these schools, whose aggregate attendance is approximately 500,000 pupils, two traveling exhibition cases were delivered on a bi-weekly schedule throughout the school year. The same service was also given to the University High School of the University of Chicago, thirty-six parochial and private schools, nine branches of the Chicago Public Library, seven branches of the Y.M.C.A., five social settlements, and two Boys' Union League Clubs, the exhibits thereby reaching probably an additional quarter of a million persons. Thus the total number of institutions served was 435, and in delivering and collecting the 870 cases loaned to them the two Museum trucks traveled a distance of 10,744 miles.

During the year an unusually large number of letters of appreciation of the Harris Extension's services was received from principals, teachers, and pupils of the schools, and the heads of other institutions to which exhibits were loaned. Several of the letters received indicated that lack of funds prevents large numbers of children from ever making excursions outside the city limits, and that many seldom can even visit the Museum because their parents cannot afford the carfare. Consequently, the Harris traveling exhibits provide the only avenue to nature study available to them. Many other letters stressed the superior value of the visual education provided by these exhibits as compared to mere book studies.

Illustrating the interest aroused by these exhibits are 145 booklets of essays by seventh and eighth grade pupils of the Mozart School. In these compositions, which were forwarded to the Museum, the children reveal in their own words that they have absorbed much knowledge from the Harris Extension cases.

As in previous years, loans of cases were made on requests received from several institutions not on the list for regular service. Six cases of natural history and economic subjects were shown at the Chicago meeting of the Institute for Juvenile Research of the State Department of Public Welfare; four cases of wild flowers and birds



FRINGED GENTIAN
 A. W. HARRIS, JR. (1893) (1893) (1893) (1893) (1893)

TYPE OF CASE LOANED TO THE SCHOOLS OF CHICAGO BY THE N. W. HARRIS PUBLIC SCHOOL
 EXTENSION OF FIELD MUSEUM OF NATURAL HISTORY
 One-third actual size

were loaned to the Central Branch of the Y.W.C.A.; three cases of wild flowers were exhibited in the booth of the Illinois Chapter of the Wild Flower Preservation Society at Mandel Brothers' department store; twelve cases were sent to the summer camp of the United Charities of Chicago at Camp Algonquin, Illinois, and twelve cases of insects and birds were on display in the Hall of Science at A Century of Progress exposition.

Each year requests are also received and granted for the loan of cases to museums and other civic organizations for the purpose of illustrating the desirability of establishing similar educational services in other communities. Such loans were made to the Museum of the Cincinnati Society of Natural History, Cincinnati, Ohio; to the Florida State Museum at Gainesville; and to the Museum Section of the Civic Auditorium, Winnipeg, Manitoba.

Thirty new cases were produced during the year, 237 were repaired, and forty-six were completely reinstalled. Many of the reinstallations required the preparation of new specimens, new accessories, and the tinting and installation of backgrounds. This work occupied the major portion of the Department staff's time. Twenty cases which had become unserviceable on account of long usage, fading or deterioration of specimens or materials, or irreparable damage, were permanently withdrawn from circulation. There remained at the end of the year 1,214 exhibits available for use. All cases were inspected, and thoroughly cleaned and polished during the year. New label copy was written for thirty-eight subjects. The work begun in 1932 of replacing all old style black and white labels with the buff type adopted as standard was completed in 1934, the last 114 cases being thus equipped.

The ceilings and side walls of the Acting Curator's office, the two large rooms used for storage of cases, and the shop of the cabinet-maker were washed and, where needed, repainted. The three laboratories and their accessory cabinets and cases were also cleaned, and repainted in lighter colors, thus affording better light for working. The labor in connection with these improvements was performed by workers assigned by the Illinois Emergency Relief Commission.

THE JAMES NELSON AND ANNA LOUISE RAYMOND FOUNDATION FOR PUBLIC SCHOOL AND CHILDREN'S LECTURES

As in past years the James Nelson and Anna Louise Raymond Foundation has provided various series of lectures and entertain-

ments for children both at the Museum and in the schools. Despite the continuance of such a counter attraction as *A Century of Progress* exposition, a larger number of school groups came for instruction in the exhibition halls than in the preceding year, and the popularity of the extension lectures continued to gain.

ENTERTAINMENTS FOR CHILDREN

Two series of free motion picture entertainments were presented, one in the spring and the other in the autumn. The programs, given on Saturday mornings in the James Simpson Theatre, were as follows:

SPRING COURSE

- March 3—The Alligator Family; Mexico.
- March 10—Beach and Sea Animals; The Making of Maple Sugar; The Triumph of the Century.
- March 17—The Strange Maoris of New Zealand.
- March 24—Who's Who in the Zoo; Little Visitors from Foreign Lands; The Story of Tea.
- March 31—Sloths and Anteaters; Musko and Musme, the Japanese Wrestlers; Quaint Boats on the Inland Sea; Japanese Children.
- April 7—The Settlement of Jamestown.*
- April 14—The Elephant and Its Child; The Romance of Life; Across the Seven Seas; Thrills of Lumbering.
- April 21—The Collision of the Icebergs; Hunting Whales; A Mother Bear Fights for Her Cub.
- April 28—Neighbors of Simba, the Lion; Plants That Trap Visitors; By the Blue Mediterranean.

AUTUMN COURSE

- October 6—Views of Our New Zoo; The Journeys of the Seeds; In the Land of Yaks; Two Cities of Old Cathay.
- October 13—Snake Myths; Columbus Sails West.*
- October 20—In Sunny Guatemala; A Beaver Pet; The Story of Coffee.
- October 27—Feeding Time for the Hippos; Rollin' Down to Rio; Under the Southern Cross; Me and My Dog.
- November 3—By Dog-train and Snowshoes; In Canada's Fiords; The Bella Coola Indians; The Romance of Rubber.
- November 10—From Trails to Rails; The Octopus and Its Cousins; In a Cave-man's Home.
- November 17—Our Animal Neighbors; The Cement Gnomes; Women Workers of Ceylon.
- November 24—An Arctic Visitor; The Story of the Pilgrims.*
- December 1—The Fall Winds Blow; The Woodchuck Sleeps; A Friend to All the World; Winter Fun.

* Gift to the Museum from the late Chauncy Keep.

In addition to the two regular series of entertainments, two special programs were offered in February as follows:

- February 12—Lincoln's Birthday Program: Abe Holds Court; Native State.
- February 22—Washington's Birthday Program: Washington and His Times.

Twenty programs in all were offered to the children of the city and suburbs. The total attendance at these entertainments was 27,653, of which 13,549 came to the spring course, 8,549 to the autumn course, and 5,555 to the special programs.

The following newspapers gave publicity to the programs: *Chicago Daily News*, *Chicago Tribune*, *Chicago Herald and Examiner*, *Chicago Evening American*, and *Chicago Daily Illustrated Times*.

An expression of appreciation for films loaned for the programs is due to the Department of the Interior of the Dominion of Canada, National Museum of Canada, Atlas Educational Films, Dynamic Pictures of New York, Canadian National Railways, Chicago Rapid Transit Company, and the Department of Conservation of Michigan.

MUSEUM STORIES FOR CHILDREN—RAYMOND FOUNDATION

Two series of Museum Stories for Children were written by members of the Raymond Foundation staff. These were published and copies were handed to all in attendance at the entertainments. The material of the stories correlated with certain films shown on the programs or with talks given by staff members who used colored slides to illustrate the topics presented. The list of stories follows:

Series XXII—The Builders of Mexico City; Sugars of Many Kinds; New Zealand and the Maoris; The Story of Tea; The Sloths and Their Cousins; The Powhatan Indians; Tapioca; Some Interesting Beach and Sea Animals; The Giraffe.

Series XXIII—How Seeds Travel; American Snake Myths; The Story of Coffee; The Hippopotamuses; The Bella Coola Indians; Snails of Land and Water; The Pearl of the Orient; The Owls; Skis and Snowshoes.

During the summer, accumulated stories were placed in a holder at the North Door to be taken by visitors. The total distribution of Museum Stories for Children during the year was 42,500 copies.

LECTURE TOURS FOR CHILDREN—RAYMOND FOUNDATION

Classwork in the exhibition halls was extended to the following groups:

	Number of groups	Attendance
Tours for children of Chicago schools		
Chicago public schools.....	204	7,752
Chicago parochial schools.....	19	615
Chicago private schools.....	12	259
Tours for children of suburban schools		
Suburban public schools.....	121	3,878
Suburban parochial schools.....	3	113
Suburban private schools.....	10	167
Tours for special groups from clubs and other organizations.....	35	1,975

In all, 404 groups were given guide-lecture service and the attendance was 14,759.

On December 4 and 6, the Museum was host to 1,186 boys and girls who were delegates to the Annual Congress of 4-H Clubs of the United States. As for several years past, the boys lunched in the cafeteria, and both groups were given special lectures in the halls devoted to prehistoric plants and animals and the Hall of the Stone Age of the Old World. Many letters of appreciation indicate that the visit to the Museum was considered one of the outstanding features of the congress.

EXTENSION LECTURES—RAYMOND FOUNDATION

Extension lectures were offered to the schools as in previous seasons. The following subjects were presented in classrooms and assemblies to both high and elementary school audiences:

FOR GEOGRAPHY AND HISTORY GROUPS

Glimpses of Eskimo Life; South America; North American Indians; Native Life in the Philippines; The Romans; The Egyptians; Migisi, the Indian Lad.

FOR SCIENCE GROUPS

Field Museum and Its Work; Prehistoric Life; Insects and Reptiles; Coal and Iron; Coffee, Chocolate, and Tea; A Trip to Banana Land; Food Fishes of the World; Birds of the Chicago Region; Animal Life of the Chicago Region; Wild Flowers of the Chicago Region; Trees of the Chicago Region; Animals at Home; Our Outdoor Friends.

The total number of extension lectures given by the staff of the Raymond Foundation was 428, and the total attendance was 162,360.

RADIO BROADCASTING—RAYMOND FOUNDATION

Radio broadcasts were given by the Raymond Foundation staff in connection with the public school radio programs of Station WMAQ. From January to the end of the spring semester talks were given every other week to the upper grades. These talks correlated with the nature study and science course being used in the schools. One talk on the Raymond Foundation was given over WGN.

ACCESSIONS—RAYMOND FOUNDATION

The Raymond Foundation acquired during the year for use in the Theatre and in the extension lectures 404 slides made by the Division of Photography. The Museum artist colored 476 slides for the Foundation.

The Foundation was also the beneficiary of the following acquisitions: 5,000 feet of motion picture film on Guatemala, presented by Mr. Leon Mandel, of Chicago, and 375 feet of film taken at the new Brookfield Zoo and purchased by the Museum.

LECTURE TOURS AND MEETINGS FOR ADULTS—RAYMOND FOUNDATION

The services of guide-lecturers were offered, as in former years, without charge, to clubs, colleges, conventions and other organizations, and to Museum visitors in general. Special tours were offered in July and August for the benefit of those attending A Century of Progress exposition. The printed monthly tour schedules were placed at the main entrance for the use of visitors, and were also distributed through libraries and other civic centers of the city and suburbs. During the year, 153 general tours and 189 tours covering specific topics were offered to the public. The adult groups which took advantage of these lecture tours numbered 323, with a total attendance of 7,545 individuals. Besides the regular public tours, special tours were given to 47 groups from colleges, clubs, and other organizations, and these were attended by 1,262 persons.

The James Simpson Theatre was used for several meetings during the year. In February, 1,050 foreign-born adults attended a program given by the Board of Education; in March, 1,250 members of the Juvenile Council of the Cook County schools held an all-day session; in June, the foreign-born adult commencement of the city schools was held there for 582 graduates; and in October, both the Theatre and the small lecture hall were used for four meetings of the American Ornithologists' Union, attended by 763 persons. Total attendance at all seven meetings was 3,645.

SUMMARY OF ATTENDANCE AT ENTERTAINMENTS, LECTURES,
TOURS, ETC.—RAYMOND FOUNDATION

The total number of groups reached through the activities of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures was 1,222, and the aggregate attendance included in these groups numbered 213,579 individuals.

LECTURES FOR ADULTS

The Museum's sixty-first and sixty-second courses of free lectures for adults were given in the James Simpson Theatre on Saturday afternoons during the spring and autumn months. They were illustrated by motion pictures and stereopticon slides. Following are the programs of both courses:

SIXTY-FIRST FREE LECTURE COURSE

March 3—Monarchs of the Air.

Captain C. W. R. Knight, London, England.

March 10—The Passing of the Old West.

Colonel Charles Wellington Furlong, F.R.G.S., Cohasset,
Massachusetts.

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- March 17—Miracles in Nature.
Mr. Arthur C. Pillsbury, Berkeley, California.
- March 24—A Naturalist in the Canadian Rockies.
Mr. Dan McCowan, Banff, Canada.
- March 31—With Byrd to the Bottom of the World.
Dr. Lawrence M. Gould, Carleton College, Northfield, Minnesota.
- April 7—The Wonderland of Mexico.
Major James C. Sawders, Nutley, New Jersey.
- April 14—Massa-Magaga: Head-takers of Formosa.
Captain Carl von Hoffman, New York.
- April 21—The South Sea Islands.
Mr. H. C. Ostrander, Jersey City, New Jersey.
- April 28—Motion Pictures.
Trail of the Swordfish; The Veldt; The Prowlers; Jungle Giants; Krakatoa.

SIXTY-SECOND FREE LECTURE COURSE

- October 6—In the Cellars of the World.
Mr. Russell T. Neville, Kewanee, Illinois.
- October 13—Volcanoes of Hawaii.
Mr. Ray Jerome Baker, Honolulu, Hawaii.
- October 20—New Zealand.
Mr. M. P. Greenwood Adams, Hackensack, New Jersey.
- October 27—The Philippines Today.
Mr. James King Steele, San Francisco, California.
- November 3—The Human Adventure.
Produced by the Oriental Institute of the University of Chicago
with technical assistance of the Erpi Picture Consultants, Inc.
Talking motion picture sketching man's rise from savagery to civilization.
- November 10—Islands of the Pacific.
Mr. H. C. Ostrander, Jersey City, New Jersey.
- November 17—Life on the Ocean Bottom and Wonders of the Plant World.
Mr. Arthur C. Pillsbury, Berkeley, California.
- November 24—The Conquest of Everest.
Air Commodore P. F. M. Fellowes, D.S.O., A.D.C., London,
England.

The total attendance at these seventeen lectures was 23,932; 13,309 for the spring course, and 10,623 for the autumn course.

A special lecture for Members of Field Museum was given on Sunday, November 25. The speaker was Air Commodore P. F. M. Fellowes, D.S.O., A.D.C., of London, and the subject "The Conquest of Everest." The attendance was 394. This brought the total attendance for all adult lectures to 24,326.

SUMMARY OF ATTENDANCE AT LECTURES, ETC.

The total number of groups receiving instruction or other services from the Museum during the year was 1,247, with an aggregate attendance of 241,550 individuals. These figures include the 1,222 groups and 213,579 individuals reached through the activities of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, as well as the 24,326 persons attend-

ing the adult lectures, and the 3,645 persons attending the meetings of outside organizations to which the use of the James Simpson Theatre and the small lecture hall was made available.

LIBRARY

During the year the physical appearance of the Library was much improved by thorough cleaning of the walls, which added much to the attractiveness of the room.

During about seven months of the year several federal Civil Works Service and Illinois Emergency Relief workers were assigned to the Library and with their assistance considerable extra work has been accomplished. The number of such workers varied at different times from one to four, and their total length of service was 650 working hours. The cataloguing of a large accumulation of pamphlets was finished by them, and the pamphlets were thus made available for use in the various Departments. Another project was the cataloguing of material which had been packed for many years and only recently placed on shelves. This work is about half finished.

A much needed inventory of the Department of Geology Library was also made by these relief helpers. Likewise with their aid 2,100 geological pamphlets were placed in covers. These were arranged alphabetically and cards written for them, 1,641 in all.

Approximately 9,800 cards have been thus written by relief workers and added to the various catalogues.

The purchases of books during the year were limited to those most needed for immediate work.

Field Museum Library depends for its growth so largely on its exchanges that this subject is always uppermost in all plans. The number of exchanges, both foreign and domestic, has had some valuable additions during 1934, and these have brought much desired material. Some valuable exchanges have also been made with members of the staff of this institution.

Although many libraries had fewer readers in 1934 than in the previous year, Field Museum Library served approximately the same number.

Friends of the Museum have graciously made gifts of books to the Library, which are much appreciated, not only because of the value of the material but also for the interest in the Library's work indicated by them.

The list of periodicals which, as reported last year, had been so drastically curtailed by the necessity of making economies, was

partly sustained by assistance given by some members of the staff who continued a number of the subscriptions so that there might be no break in the files. Grateful acknowledgment of this cooperation is made herewith.

Assistant Curator Henry Field, on his return from the Field Museum Anthropological Expedition to the Near East, brought an important collection of books received from various institutions, mostly in the Union of Soviet Socialistic Republics.

The American Friends of China, Chicago, again made generous gifts of greatly desired books, selected by the late Dr. Berthold Laufer, Curator of Anthropology, to supplement to best advantage works already on the shelves.

At the death of Dr. Laufer his private library, which he had accumulated and used in connection with his work, became the property of Field Museum as a result of a bequest for which he had arranged some years ago. It will add 5,000 or more titles to the Library. As the Museum already had a carefully selected collection of works on China, and the greater part of Dr. Laufer's books are on this subject, this addition will give the Museum one of the most complete libraries on China in the Middle West. The Chinese section will be segregated so as to be easily accessible for the use of scholars desirous of consulting it. Dr. Laufer's books on other subjects will greatly strengthen other sections of the Library.

Mr. Sadajiro Yamanaka, of New York, enriched the Library by presenting some valuable books on ceramics of China and Japan: *Ko-Sometsukesara Hyakusen* (Album of Selected Old Chinese Blue and White Porcelain Dishes); *Ko-Akaesara Hyakusen* (Album of Selected Old Three-color Porcelain Dishes of China); *Nippon Koto Meihinshu* (Album of Selected Old Ceramics of Japan); *Kutani Nabeshima Kakiyemon Meihinshu* (Album of Old Ceramics of Kutani, Nabeshima and Kakiyemon); *Tanamono Shusei* (Collection of Japanese Wood, Lacquer Tables and Chests). All of these are illustrated with beautiful plates.

Mr. Fahim Kouchakji, of New York, presented a work in two volumes entitled *Glass; Origin, History, Chronology, Technic, and Classification to the 16th Century*. This is a subject on which it is difficult to find information, and these volumes will be very useful.

A Century of Progress exposition sent to the Library a collection of its most interesting publications.

Mrs. Mae Ellena Bachler, of Chicago, presented a very beautifully prepared book by Manly P. Hall: *Encyclopedic Outline of the Masonic, Hermetic, Qabbalistic and Rosicrucian Symbolic Philosophy*.

The Carnegie Institution of Washington, D.C., has again presented several important volumes of its valuable publications. President Stanley Field has continued presenting week by week the issues of the *Illustrated London News*, and Director Stephen C. Simms has given those of the *Museum News* published by the American Association of Museums. The publishers of the *Scientific American* kindly placed the Museum Library on their free list for the coming year.

Among other gifts that have been of especial value are: *Liberia Rediscovered*, presented by Mr. Harvey S. Firestone, Akron, Ohio; L. Kraglievich's *La Antigüedad Pliocena de las Faunas de Monte Hermoso y Chapaduratal*, presented by the National Museum of Buenos Aires; *Mélanges entomologiques*, volume 5, from M. Henri Gadeau de Kerville, Paris; 14 botanical works from Mr. Hermann Benke, Chicago; *Glossary of Arms and Armor in All Countries and in All Times*, from Mr. George Cameron Stone, Portland, Maine; *Sweet's Architectural Catalogue*, 4 volumes, from the publishers, Sweet's Catalogue Service, New York; and Bureau of American Ethnology *Annual Reports*, 4 volumes, from Misses Edith and Faith Wyatt, Chicago.

Even more than in previous years the Museum Library is indebted to other libraries for loans of books needed in the work of this institution. Among those especially helpful were: The Library of Congress, Washington, D.C.; Library of the American Museum of Natural History, New York; University of Illinois Library, Urbana, Illinois; University of Michigan Library, Ann Arbor, Michigan; Grosvenor Library, Buffalo, New York; the libraries of the Peabody Museum of Archaeology and the Museum of Comparative Zoology at Harvard University, Cambridge, Massachusetts; University of Chicago Library; United States Department of Agriculture Library, Washington, D.C.; and the library of the Arnold Arboretum, Jamaica Plain, Massachusetts. Field Museum has also lent more books to other institutions this year than at any time before.

Binding has necessarily been omitted during the last few years, but the Library was fortunate in having a little of the most needed work done in 1934.

During the year there have been 2,252 books and 3,000 pamphlets added to the Library. The approximately 5,000 books left to the Museum by Dr. Laufer are not included here because the work of

cataloguing them has not yet been completed. There have been written and filed 15,626 catalogue cards, bringing the total number in the files to 438,480. From the John Crerar Library, Chicago, 4,851 cards were received and filed. To the Library's record books, now occupying eighteen volumes, there were added 2,252 entries, making the total number of entries 86,727.

DIVISION OF PRINTING

The work in the Division of Printing for the entire year was, as nearly as possible, evenly divided between Museum publications and exhibition labels. The total number of labels produced for all Departments was 24,282. Miscellaneous work totaled 373,262 impressions.

Seven additions were issued in the regular Museum publication series, of which four were geological, one was anthropological, one zoological, and one the *Annual Report of the Director* for 1933. Of these a total of 10,530 copies was produced. The aggregate number of pages of type composition was 1,002. Seven leaflets were printed, of which three were anthropological (two reprints, and one a revised new edition of the same leaflet), one was botanical, one geological (a reprint), and two were zoological (of which one was a reprint). A botanical guide, *North American Trees*, was also printed. Of these additional books, 16,347 copies were printed. They involved a total of 318 pages of type composition.

Following is a detailed list of these publications:

PUBLICATION SERIES

- 328.—Report Series, Vol. X, No. 1. *Annual Report of the Director for the Year 1933*. January, 1934. 136 pages, 12 photogravures. Edition 5,474.
- 329.—Anthropological Series, Vol. XXI, No. 2. *The Ovimbundu of Angola*. By Wilfrid D. Hambly. July 11, 1934. 276 pages, 84 photogravures. Edition 803.
- 330.—Zoological Series, Vol. XIII, Part VII. *Catalogue of Birds of the Americas*. By Charles E. Hellmayr. November 15, 1934. 532 pages. Edition 770.
- 331.—Geological Series, Vol. VI, No. 5. *The Auditory Region of an Upper Pliocene Typotherid*. By Bryan Patterson. December 31, 1934. 8 pages, 3 zinc etchings. Edition 819.
- 332.—Geological Series, Vol. VI, No. 6. *Upper Premolar-molar Structure in the Notoungulata, with Notes on Taxonomy*. By Bryan Patterson. December 31, 1934. 22 pages, 14 zinc etchings. Edition 883.
- 333.—Geological Series, Vol. VI, No. 7. *Cranial Characters of Homalodotherium*. By Bryan Patterson. December 31, 1934. 6 pages, 1 zinc etching. Edition 884.
- 334.—Geological Series, Vol. VI, No. 8. *Trachytherus, a Typotherid from the Desendo Beds of Patagonia*. By Bryan Patterson. December 31, 1934. 22 pages, 5 zinc etchings. Edition 897.

LEAFLET SERIES

- Anthropology, No. 30.—*The Races of Mankind* (second reprint). By Henry Field, with preface by Berthold Laufer, and an introduction by Sir Arthur Keith. 40 pages, 8 photogravures, 1 plan of hall. February, 1934. Edition 500.

- Anthropology, No. 30.—The Races of Mankind (third reprint, *see above*). March, 1934. Edition 629.
- Anthropology, No. 30.—The Races of Mankind (second edition, revised; *see above*). 44 pages. June, 1934. Edition 3,011.
- Botany, No. 17.—Common Weeds. By Paul C. Standley. 32 pages, 27 photogravures. September, 1934. Edition 3,068.
- Geology, No. 11.—Neanderthal (Mousterian) Man (reprint). By Oliver C. Farrington and Henry Field. 16 pages, 8 photogravures, 1 map. December 26, 1934. Edition 2,559.
- Zoology, No. 13.—Sculptures by Herbert Haseltine of Champion Domestic Animals of Great Britain. 6 pages of text, 19 photogravures, with captions opposite. June, 1934. Edition 2,564.
- Zoology, No. 10.—The Truth about Snake Stories (reprint). By Karl P. Schmidt. 20 pages. December 8, 1934. Edition 2,514.

GUIDE SERIES

- Botany Guide. North American Trees. By Samuel J. Record. September 17, 1934. 120 pages, 85 zinc etchings. Edition 1,502.

DIVISIONS OF PHOTOGRAPHY AND ILLUSTRATION

The Division of Photography in 1934 produced negatives, prints, enlargements of photographs, lantern slides, and transparent exhibition labels totaling 23,095 in number. These included 280 photographic prints and 59 stereopticon slides for sales on orders placed by the public. The balance were for various uses in Departments and Divisions of the Museum. Of 20,137 prints made, 12,864 were done by relief workers assigned by the federal Civil Works Service and the Illinois Emergency Relief Commission; the balance were made by the Museum's regular photographers. The Division benefited from the assignment of from one to three relief workers throughout most of the year, whose hours of service totaled nearly 700. In addition to the making of prints, which included many from negatives obtained through the Joint Project of the Rockefeller Foundation and Field Museum for photographing botanical type specimens in European museums, the relief workers made great progress on the huge task of cataloguing the Division's negative collection (now numbering more than 80,000 negatives). In this work the relief assistants wrote and filed about 30,500 index cards.

The total number of photogravure prints produced in the Division of Photogravure was 578,820. These were for the illustration of publications and leaflets, for headings of posters, for covers of various published works, and for picture post cards.

The Museum Illustrator completed 1,238 orders for the Museum's Departments and Divisions. These included 323 pen drawings, 19 wash drawings, the coloring of 461 lantern slides, and other miscellaneous tasks. One relief worker was assigned for a short period to assist the Illustrator in coloring lantern slides and other work.

DIVISION OF PUBLICATIONS

The distribution of publications, as in previous years, was about equally divided between foreign and domestic institutions from which Field Museum in turn receives publications for its Library.

An increase in both foreign and domestic exchanges was made, thirty-five names having been added to the mailing lists. The total number of books sent on exchange was 6,146, of which 4,941 were copies of scientific publications and 1,205 were leaflets. The Museum also sent 3,879 complimentary copies of the *Annual Report of the Director* for the year 1933, and 696 leaflets, to Members of the institution. Sales for the year show totals of 420 publications, 9,166 leaflets, and 7,850 miscellaneous publications and pamphlets—guides, handbooks, and memoirs.

Grateful acknowledgment is tendered the Smithsonian Institution, at Washington, D.C., for its cordial cooperation in distributing Field Museum publications which were sent to the international exchange bureau to be forwarded to foreign destinations.

For future sales and exchanges, 14,301 copies of the various publications and leaflets issued during 1934 were wrapped into 291 packages, labeled, and stored in the stock room.

Published early in the autumn, a season when so many people are especially interested in trees and weeds, the reference book on *North American Trees* and the leaflet on *Common Weeds* have been greatly in demand. Amateur botanists, teachers, students, and others interested in the plants local to the Chicago region, and in trees native to this country, have found these well-illustrated books to be of much use.

Fairly wide distribution also has been given a leaflet issued last June, which describes and illustrates the sculptures by Herbert Haseltine of champion domestic animals of Great Britain, presented to the Museum through the generosity of Mr. Marshall Field.

Interest in the living races of mankind and in prehistoric man continued to manifest itself in the numerous purchases of copies of the *Races of Mankind* and *Prehistoric Man* leaflets. These two books, published in the summer of 1933, when the exhibition halls to which they relate were first opened to the public, have been quite as popular as they were during the year they were issued. More than 3,100 copies were sold in 1934.

Early in the summer the Museum added to the various items on display and sale at its leaflet and post card stands a pocket size

folding type of stereoscope, together with views of habitat groups and other exhibits in Field Museum. The views were arranged in units of five and ten pictures each. This proved a highly successful venture, as many visitors purchased these stereoscopes and the various sets of views as a most desirable souvenir. The views and stereoscopes are a product of the Keystone View Company of Meadville, Pennsylvania.

Numerous sales have been made of several books published outside and handled on consignment at the Museum. They pertain to natural history, are written in popular style, and the authors of some of them are members of the Museum staff.

POST CARDS

Although the number of post cards sold during 1934 was considerably less than in the previous year, because of the decrease in attendance, the total of 107,842 was very gratifying.

Of the sets of cards containing views of the bronzes illustrating the races of mankind, more than 934 (totaling over 27,510 cards) were sold. An endeavor was made to serve persons especially interested in types of certain limited geographic divisions. This was done by offering, in addition to the set of thirty cards of miscellaneous racial types, five other sets covering respectively the racial types of Africa, America, Asia, Europe, and Oceania and Australia.

One new set of cards was added to the series on zoological subjects. New views for the individual post card assortment include forty-seven anthropological subjects, twenty-six zoological, and one general.

DIVISION OF PUBLIC RELATIONS

Through the continued cooperation of the newspapers and various national and international news distributing agencies, Field Museum has been enabled throughout 1934 not only to gain publicity for its current activities but also to use the press as an additional means toward the accomplishment of the institution's primary mission—the popular dissemination of scientific information.

There has been prepared and distributed to newspapers, magazines, news service associations, radio stations, and other publicity media an average of five press releases a week. These, and numerous photographs of Museum subjects, received generous space in all the newspapers of Chicago. Through the channels made available by such organizations as the Associated Press, United Press, International News Service, Universal Service, and Science Service, they appeared also in newspapers in all parts of this country and frequently

in foreign countries as well. In addition, the Museum has received attention through articles and photographs prepared by members of newspaper staffs especially assigned by their editors for this purpose. Likewise, the Museum's cultural and educational values have been the subject of occasional favorable comment in the editorial as well as the news columns.

For the fifth year the bulletin, *Field Museum News*, has been published monthly. As in the past, it has been sent to all Members of the Museum promptly at the beginning of each month. It is circulated also as an exchange to various scientific institutions, and to newspapers and magazines which frequently reprint or quote from it, thus augmenting the Museum's general publicity. Continued efforts have been made to include in each issue articles and pictures which would appeal to the widely varying interests of the bulletin's several thousand readers.

The Museum has been advertised, as in past years, without cost, through media generously placed at its disposal by various organizations, for which appreciation is herewith expressed. The Illinois Central System and the Chicago and North Western Railway again permitted the display at their city and suburban stations of posters in the spring and autumn announcing the Museum's lecture courses. These placards have likewise been posted in department stores, hotels, clubs, libraries, schools, and other establishments having wide public contacts. Many of these organizations, as well as local, interurban, and interstate transportation companies and agencies, further advertised the Museum by distributing folders giving information about the institution.

Various opportunities have arisen whereby the Museum obtained radio publicity. Noteworthy was a series of talks by members of the Museum staff given at the invitation of WGN (the *Chicago Tribune* station), and a special program arranged by WLS (the *Prairie Farmer* station).

Work was performed by the Division of Public Relations in connection with certain published matter of the Museum, such as a new edition of the General Guide to the exhibits, a leaflet on the collection of sculptures by Herbert Haseltine of British champion domestic animals, and various special articles, reports, etc. A large volume of correspondence and other detail was also handled.

Grateful acknowledgment is hereby made to the Consolidated Press Clipping Bureaus of Chicago for their continuance, for the second year, of press clipping service to the Museum without charge.

DIVISION OF MEMBERSHIPS

The decline in the number of persons on the Museum's membership rolls, which had been serious for several years, seemed to be almost completely checked in 1934. It is encouraging to note that the net loss of members for the year was only 57, as compared to losses of 320 in 1933, 819 in 1932, and 702 in 1931.

The Museum is greatly indebted to those Members who have continued to give their loyal support through the difficult years of depression. It is realized that many of those who resigned had no alternative in the face of the distressing economic conditions which have prevailed, and with full appreciation of the assistance they rendered to the institution in the past, the Museum extends to them an invitation to renew their memberships whenever they may find it possible.

The following tabulation shows the number of names on the list in each of the Museum's membership classifications at the end of 1934:

Benefactors.....	18
Honorary Members.....	18
Patrons.....	31
Corresponding Members.....	7
Contributors.....	109
Corporate Members.....	47
Life Members.....	304
Non-Resident Life Members.....	8
Associate Members.....	2,396
Non-Resident Associate Members.....	4
Sustaining Members.....	25
Annual Members.....	1,175
Total Memberships.....	4,142

The names of all persons listed as Members during 1934 will be found at the end of this book.

CAFETERIA

The total number of persons served with meals or refreshments in the lunch rooms of the Museum in 1934 was 141,207. Of these, 109,257 were served in the main public cafeteria and in the Aztec dining room which is assigned to the officials and staff of the Museum and their guests; and 31,950 in the special children's room. There was a decrease of approximately 69,000 from the total number served in 1933, attributable to the decreased Museum attendance.

In the pages which follow are submitted the Museum's financial statements, lists of accessions, names of Members, *et cetera*.

STEPHEN C. SIMMS, *Director*

COMPARATIVE ATTENDANCE STATISTICS AND DOOR RECEIPTS

FOR YEARS 1933 AND 1934

	1934		1933
Total attendance.....	1,991,469		3,269,390
Paid attendance.....	99,553		212,298
Free admissions on pay days:			
Students.....	19,870		21,901
School children.....	54,712		90,151
Teachers.....	1,139		2,295
Members.....	1,208		1,817
Admissions on free days:			
Thursdays (52).....	523,580	(52)	895,487
Saturdays (52).....	603,953	(52)	949,543
Sundays (52).....	687,454	(53)	1,095,898
Highest attendance (Sept. 2).....	55,458	(Aug. 24)	65,966
Lowest attendance (Dec. 21).....	56	(Feb. 7)	22
Highest paid attendance (Sept. 3).....	3,946	(Sept. 4)	6,363
Average daily admissions (365 days).....	5,456	(365 days)	8,957
Average paid admissions (209 days).....	476	(208 days)	1,020
Number of guides sold.....	4,706		8,918
Number of articles checked.....	37,310		64,322
Number of picture post cards sold.....	107,842		164,729
Sales of publications, leaflets, handbooks, portfolios, and photographs.....	\$4,209.48		\$6,306.23

COMPARATIVE FINANCIAL STATEMENTS

FOR YEARS 1933 AND 1934

INCOME		1934	1933
Endowment Funds.....	\$173,059.17		\$183,042.24
Funds held under annuity agree- ments.....	38,349.29		39,134.46
Life Membership Fund.....	13,081.56		13,346.10
Associate Membership Fund...	12,669.33		12,753.90
South Park Commission and Chicago Park District.....	101,226.19		125,802.68
Annual and Sustaining Member- ships.....	10,061.00		9,859.00
Admissions.....	24,888.25		53,074.50
Sundry receipts.....	29,439.45		21,171.41
Contributions, general purposes.	28,467.95		15,991.47
Contributions, special purposes (expended <i>per contra</i>).....	43,718.83		145,746.92
Special funds: Part expended this year for purposes cre- ated (included <i>per contra</i>)..	16,041.03		16,396.09
		\$491,002.05	\$636,318.77
EXPENDITURES			
Collections.....	\$ 70,220.98		\$175,767.04
Expeditions.....	24,662.30		7,973.96
Furniture, fixtures, etc.....	6,389.04		12,894.68
Pensions, group insurance.....	17,320.90		16,136.76
Departmental expenses.....	31,763.13		38,847.64
General operating expenses....	280,522.79		295,342.04
Annuities on contingent gifts...	36,305.69		37,138.20
Added to principal of annuity endowments.....	2,043.60		1,996.26
Interest on loans.....	4,258.29		6,049.73
Paid on bank loans.....	10,000.00		51,100.00
		\$483,486.72	\$643,246.31
Balance.....	\$ 7,515.33	Deficit	\$ 6,927.54
Notes payable January 1.....	\$105,000.00		\$156,100.00
Paid on account.....	10,000.00		51,100.00
Balance payable December 31.....	\$ 95,000.00		\$105,000.00

THE N. W. HARRIS PUBLIC SCHOOL EXTENSION

COMPARATIVE FINANCIAL STATEMENTS FOR YEARS 1933 AND 1934

	1934	1933
Income from Endowment.....	\$19,427.71	\$17,803.58
Operating expenses.....	17,654.81	17,700.60
Balance, December 31.....	\$ 1,772.90	\$ 102.98

LIST OF ACCESSIONS

DEPARTMENT OF ANTHROPOLOGY

AMERICAN FRIENDS OF CHINA, Chicago: 1 brush-holder of the Emperor K'ien-lung, made of Burmese padouk wood with inlaid inscriptions and designs in ivory, jade, and semi-precious stones, dated A.D. 1736—China (gift).

ASHER, DR. HARRY H., Chicago: 3 human lower molar teeth of unusual type—American whites, Chicago, Illinois (gift).

AYER, EDWARD E. and EMMA B., ESTATE OF, Chicago: 18 blankets—southwestern United States and Mexico (gift).

BEER, WILLIAM, Oakland City, Indiana: about 60 fragments of flint artifacts—Fort Gibson, Oklahoma (gift).

BEDDOES, HUBERT, Chicago: 1 folio album containing 134 large photographs—China, Japan, and Java (gift).

BENNETT, MISS HELEN B., Los Angeles, California: 25 stone artifacts: knives, scrapers, and projectiles—Salt Cliffs, Arkansas (gift).

BIRREN, MRS. JOSEPH, Chicago: 1 stone ax—Illinois; 1 boomerang—Australia; 2 wooden war clubs, 1 conch-shell trumpet—Polynesia; 1 muzzle with bridle—Spain; 1 cotton baldric—India (gift).

BOULTON, MRS. LAURA C., Chicago: 18 musical instruments—west Africa (gift).

CARTER, MRS. DAGNY, Peiping, China: 4 fragments of Chou pottery and 1 crupper damasked iron—Sui-yüan, Shensi Province, China (gift).

CROCKER, TEMPLETON, San Francisco, California: 1 carved bowl—Marquesas Islands; 24 mats, baskets, ornaments, fish-hooks, etc.—Puka Puka and Samoa; 810 examples of weapons, clothing, and fishing, household, personal and ceremonial objects—chiefly from southeastern Solomon Islands, Rennell, Belona, Sikaiana, Swallow group, and Anuda Islands; 9 phonograph records and 325 photographs—Polynesia and Melanesia (gift).

CROSS, MISS GRACE BREWSTER, Chicago: 1 feather headband (lei), 1 shell headband, 1 string of crabs'-eyes or vine beads (*Abrus precatorius*), 2 strings of seed beads—Honolulu, Hawaii (gift).

CUTTING, C. SUYDAM, New York: 1 bag of monkey skin, 1 bag of goral skin—Upper Burma (gift).

DOUGLASS, DR. A. E., and HARRY T. GETTY, Tucson, Arizona: 32 polished cross sections of logs from various dated ruins, charts, photographs, and a boring tool—Arizona and New Mexico (gift).

DUKE, MISS T., Chicago: 1 cactus girdle of fiber, 4 fiber moccasins, 2 stone arrowheads—Rio Grande River bank, 18 miles northeast of Del Rio, Texas (gift).

FELIX, BENJAMIN B., Chicago: 48 Chinese coins and 2 Japanese coins—China and Japan (gift).

FIELD MUSEUM OF NATURAL HISTORY:

Collected by J. Eric Thompson (leader, Carnegie Institution—Field Museum Joint Expedition to British Honduras): 13 pottery whistles, figurines; 69 pottery vessels, disks; 115 lots (about 6,000 pieces) of pottery sherds; 14 stone knives and spear-heads; 38 obsidian and 5 jade objects; 21 shell ornaments and beads; 13 spindle whorls of stone and pottery; 1 pearl; 1 textile; 2 mirrors; 8 miscellaneous objects such as carbon and paint for identification; 14 skeletal pieces. Total, 6,199 pieces—San José, Orange Walk District, British Honduras.

Collected by Field Museum—Oxford University Joint Expedition to Mesopotamia (Marshall Field Fund): 21 cases of Sumerian, Babylonian, and Sasanian objects—Kish, Mesopotamia.

Collected by Paul S. Martin (leader, Field Museum Archaeological Expedition to the Southwest): 38 pieces of pottery, 3,477 potsherds, 8 human skeletons, 5 arrowheads, 10 bone awls, 27 pieces of roof beams (shipped to Gila Pueblo), 33 pieces of animal bones, and 3 pendants—Lowry ruin, Ackmen, Colorado.

Collected by Henry Field (leader, Field Museum Anthropological Expedition to the Near East, 1934): 500 flint implements of paleolithic and neolithic types from North Arabian desert, Kurdistan, and Persia; 10 basalt blocks of Himyaritic inscriptions from Transjordan; 2 fragments of twelfth century Mohammedan vessels from Beled Sinjar, Iraq; approximately 7,000 photographs; 800 hair samples—Near East and Russia.

Collected by Miss Malvina Hoffman (Expedition to Asia): 3 nail protectors of enameled silver—China.

Transferred from Department of Zoology: 1 skeleton of female gibbon—southeast Borneo; 1 skeleton of female chimpanzee—south Cameroon, west Africa.

Purchases: 1 pair of Navaho moccasins—New Mexico; 1 complete skeleton of a Chinese.

GANN, MRS. M. E. L., Lake Forest, Illinois: 2 strings of Russian blue glass trade beads—Alaska (gift).

GILA PUEBLO (museum), Globe, Arizona: 30 specimens of prehistoric painted pottery—Rio Mimbres and other localities of New Mexico (exchange).

Ito, T., Chicago: 3 samples of old fabrics—Japan (exchange); 2 volumes of Chinese wood-engravings illustrating agriculture and sericulture, Japanese edition of 1807—China-Japan (gift).

JOHNSON, MRS. FRANK S., Pasadena, California: 1 Chinese mandarin coat—China (gift).

KEEP, CHAUNCEY, ESTATE OF, Chicago: bronze heads of Toda, Berber, San Ildefonso Pueblo woman; bronze bust of Bontoc Igorot (also plaster casts of same); bronze busts of an Alpine, a Zulu woman, a Turk, a Jicarilla Apache, a Carib, and a Korean; life-size figure of a Navaho (gift).

DEPARTMENT OF BOTANY—ACCESSIONS

ALFARO, PROFESSOR ANASTASIO, San José, Costa Rica: 46 specimens of mosses (gift).

ANDREWS, A. H., Estero, Florida: 2 chayote fruits (gift).

ARNOLD ARBORETUM, Jamaica Plain, Massachusetts: 650 specimens of plants (exchange).

KOUCHAKJI, FAHIM, New York: 1 glass pitcher with Christian designs, fourth century A.D.—Syria (exchange).

MANDEL, FRED L., JR., and LEON, IN MEMORY OF THEIR MOTHER, MRS. BLANCHE R. MANDEL, Chicago: 14 Lamaist paintings, 18th-19th century (framed)—Tibet and China (gift).

MARTIN, MRS. GEORGE H., Chicago: 2 carved horn spoons—Sitka Indians, Sitka, Alaska (gift).

NATIONAL MUSEUM, Copenhagen, Denmark: 16 pieces of fur garments; 57 wood, 29 bone, 49 stone, and 17 leather objects; 2 glass beads—Greenland (exchange).

NATIONAL MUSEUM OF MEXICO, Mexico City, Mexico: 76 pottery objects—Oaxaca, Jalisco, and Campeche, Mexico (exchange).

RATHBUN, ROWLAND, Chicago: 23 drawings of Sasanian stucco (gift).

REEVES, CAPTAIN DACHE M., Dayton, Ohio: 2 large aerial photographs of Hopewell Mounds, Ohio (gift).

SARGENT, HOMER E., Pasadena, California: 1 blanket—Kabyle, Algeria, northwest Africa (gift).

SETON-KARR, H. W., London, England: 10 paleolithic stone implements—Somaliland, east Africa (gift).

TAYLOR, ZACHARY, Bangkok, Siam: 2 leather shadow-play figures—Bangkok, Siam (gift).

TOLER, G. E., Chicago: 1 stone effigy pipe, 1 pottery vessel—Bluff City, Fulton County, Illinois (gift).

WARREN, ALLYN D., Chicago: 1 large carved figure of Vishnu riding on Garuda—Bali, Dutch East Indies (gift).

WILSON, SAMUEL, Chicago: 1 official document on yellow paper bound in yellow silk—China (gift).

ARSÈNE, REV. BROTHER G., Santa Fe, New Mexico: 2,702 specimens of plants—New Mexico (gift).

ATLAS BREWING COMPANY, Chicago: 11 samples of beverages (gift).

BAILEY, DR. L. H., Ithaca, New York: 100 photographs of palms (exchange).

240 FIELD MUSEUM OF NATURAL HISTORY—REPORTS, VOL. X

BELLUE, MISS MARGARET K., Sacramento, California: 1 plant specimen (gift).

BENKE, HERMANN C., Chicago: 12 negatives, 6 photographs of Osage orange trees, 88 specimens of Illinois plants (gift).

BUHL, CARL, Chicago: 203 plant specimens (gift).

BURKART, ARTURO, Buenos Aires, Argentina: 93 specimens of plants—Argentina (exchange).

CABRERA, PROFESSOR ANGEL L., La Plata, Argentina: 64 specimens of plants—Argentina (exchange).

CALDERON, DR. SALVADOR, San Salvador, Salvador: 2 plant specimens (gift).

CALIFORNIA ACADEMY OF SCIENCES, San Francisco, California: 372 specimens of plants—western United States (exchange).

CALIFORNIA DEPARTMENT OF AGRICULTURE, Sacramento, California: 1 plant specimen (gift).

CANAL ZONE EXPERIMENT GARDENS, Summit, Canal Zone: 1 plant specimen (gift).

CARDÉNAS, PROFESSOR MARTÍN, Cochabamba, Bolivia: 178 specimens of plants—Bolivia (gift).

CARNEGIE MUSEUM, Pittsburgh, Pennsylvania: 27 specimens of plants—Barro Colorado Island (exchange).

CATHOLIC UNIVERSITY OF AMERICA, Washington, D.C.: 275 plant specimens (exchange).

CLARESON, MRS. RALPH, Chicago: 3 plant specimens (gift).

CONSERVATOIRE BOTANIQUE, Geneva, Switzerland: 140 specimens of plants (exchange).

CURTIN, MRS. THOMAS E., Santa Fe, New Mexico: 6 plant specimens (gift).

DAHLGREN, DR. B. E., Chicago: 1 specimen of jaboticaba wood—Brazil (gift).

DEPAUW UNIVERSITY, Greencastle, Indiana: 150 specimens of plants—Hawaii (exchange).

DESERT LABORATORY, Tucson, Arizona: 18 plant specimens (gift).

DIRECCION GENERAL DE AGRICULTURA, Guatemala City, Guatemala: 1 plant specimen (gift).

DONALDSON, C. S., Avon Park, Florida: 3 plant specimens (gift).

DOOLITTLE, MRS. HAROLD M., Onekama, Michigan: 1 plant specimen (gift).

DUPONT DE NEMOURS, E. I., AND COMPANY, Wilmington, Delaware: 1 sample of synthetic rubber (gift).

ELIAS, REV. BROTHER, Barranquilla, Colombia: 348 specimens of plants—Colombia (gift).

FIRESTONE TIRE AND RUBBER COMPANY, Akron, Ohio: 1 specimen rubber latex, 1 specimen Jelutong rubber (gift).

FIELD MUSEUM OF NATURAL HISTORY:
Collected by Henry Field and Richard Martin (Field Museum Anthropological Expedition to the Near East): 550 samples of seeds, 55 samples of woods, 8,500 plant specimens.

Collected by Karl P. Schmidt (Leon Mandel Guatemala Expedition of Field Museum): 3 specimens of plants—Guatemala.

Rockefeller Foundation Fund for Photographing Type Specimens: 5,750 negatives of type specimens of European herbaria.

Transferred from the Division of Photography: 3,393 photographic prints.

Purchases: 100 plant specimens—Patagonia; 508 plants—Peru; 414 specimens of plants—Brazil; 175 specimens of cryptogams—Germany, Austria, and Switzerland; 478 specimens of plants—Honduras; 1 specimen of kola nuts—west Africa.

FISHER, GEORGE L., Houston, Texas: 136 plant specimens, chiefly from Texas (gift).

FLORES, DR. ROMÁN S., Progreso, Yucatan: 3 photographs, 2 wood specimens, 63 plant specimens (gift).

FOREST RESEARCH INSTITUTE, Dehra Dun, India: 30 wood samples (exchange).

FREYMUTH, MRS. W. C., River Forest, Illinois: 1 plant specimen (gift).

FRITZ, PROFESSOR EMANUEL, Berkeley, California: 1 branch of incense cedar, 1 branch of redwood, 1 branch of western red cedar, 1 branch of Douglas fir, 1 branch of Port Orford cedar, 1 branch of Monterey cypress (gift).

FULLER, DR. GEORGE D., Chicago: 1 specimen of alga—Florida (gift).

GÖTEBORGS BOTANISKA TRÄDGÅRD, Göteborg, Sweden: 455 plant specimens—Europe, Chile, Juan Fernandez (exchange).

GRAHAM, GEORGE, Chicago: 1 sample of maple sugar—Wisconsin (gift).

GRANT, MRS. ADELE L., Los Angeles, California: 77 plant specimens—south Africa (gift).

GRAY HERBARIUM OF HARVARD UNIVERSITY, Cambridge, Massachusetts: 100 photographic prints, 180 specimens of plants (exchange).

HAYNES, MISS CAROLINE C., Highlands, New Jersey: 20 specimens of hepatics—New Mexico (gift).

HERMANN, FREDERICK J., Ann Arbor, Michigan: 115 plant specimens—New Jersey and Pennsylvania (exchange).

HINES, EDWARD, LUMBER COMPANY, Chicago: 1 board of ponderosa pine (gift).

HOCHREUTINER, B. P. G., CONSERVATOIRE ET JARDIN BOTANIQUES, Geneva, Switzerland: 2 blueberry cradles (gift).

HOOD, PROFESSOR J. DOUGLAS, Rochester, New York: 2 plant specimens—Canal Zone (gift).

IMPERIAL FORESTRY INSTITUTE, Oxford, England: 71 specimens of plants—tropical Africa (exchange).

JARDIM BOTANICO, Rio de Janeiro, Brazil: 74 specimens of plants—Brazil (exchange).

JARDIN BOTANICO, Madrid, Spain: 270 plant specimens—Peru and Colombia (exchange).

JOHNSON, S. C., AND SON, INC., Racine, Wisconsin: 9 samples of vegetable waxes (gift).

KANSAS AGRICULTURAL COLLEGE, Manhattan, Kansas: 542 specimens of plants—Kansas and Michigan (exchange).

KING, C. J., UNITED STATES FIELD STATION, Sacaton, Arizona: 2 cotton plants (gift).

LABORATORIOS DEL MINISTERIO DE AGRICULTURA, San Salvador, Salvador: 8 plant specimens (gift).

LANKESTER, CYRUS H., Cartago, Costa Rica: 1 photograph (gift).

LAWRANCE, ALEXANDER E., Bogotá, Colombia: 9 plant specimens—Bolivia (gift).

LENARD, I., Chicago: 1 sample of potato whiskey—Poland (gift).

LINGNAN NATURAL HISTORY SURVEY AND MUSEUM, Canton, China: 105 samples of woods—China (exchange).

LIONEL DISTILLED PRODUCTS, INC., Chicago: 12 samples of distilled and fermented beverages (gift).

McFARLIN, JAMES B., Sebring, Florida: 2 plant specimens (gift).

MARTINEZ, PROFESSOR MAXIMINO, Mexico City, Mexico: 1 plant specimen (gift).

MEXIA, MRS. YNES, San Francisco, California: 34 photographic prints, 332 specimens of plants—Mexico, Brazil and Peru (gift).

MILTON, ROY H., Nashville, Tennessee: 2 samples of tobacco (gift).

MOORE, GEORGE E., Lebanon, Missouri: 1 plant specimen (gift).

MOORE, O. G., Brownsboro, Alabama: 1 sample of chittam wood (gift).

MUELLER, C. H., Cuero, Texas: 5 plant specimens (gift).

MUSEO NACIONAL, San José, Costa Rica: 122 specimens of plants—Costa Rica (gift).

MUSEO NACIONAL DE HISTORIA NATURAL, Buenos Aires, Argentina: 100 specimens of plants—Argentina (exchange).

NATIONAL HERBARIUM OF VICTORIA, South Yarra, Australia: 52 plant specimens—Australia (exchange).

NATURHISTORISKA RIKSMUSEET, Stockholm, Sweden: 361 specimens of mosses from Scandinavia, 370 plant specimens—South America and Europe (exchange).

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NEW YORK BOTANICAL GARDEN, Bronx Park, New York: 652 specimens of plants (exchange).

NEW YORK COFFEE AND SUGAR EXCHANGE, INC., New York: 9 samples of standards for coffee grading (gift).

ORTEGA, JESUS G., Mazatlán, Mexico: 223 specimens of Mexican plants (gift).

PAGE, E. C., Evanston, Illinois: 1 plant specimen (gift).

PARAMOUNT LIQUOR COMPANY, Chicago: 3 specimens of liquors (gift).

PARODI, LORENZO R., Buenos Aires, Argentina: 50 plant specimens—Argentina (exchange).

PHILP, GUY L., COLLEGE OF AGRICULTURE, UNIVERSITY OF CALIFORNIA, Davis, California: 1 specimen jujube (gift).

POMONA COLLEGE, DEPARTMENT OF BOTANY, Claremont, California: 49 specimens of plants, mostly from Lower California (exchange).

POPE, W. T., Honolulu, Hawaii: 1 specimen of stems of awa (gift).

PURPUS, DR. C. A., Zacuapam, Mexico: 160 specimens of Mexican plants (gift).

RICHMOND CEDAR WORKS, RECEIVERS FOR, Norfolk, Virginia: 1 board of southern white cedar (gift).

ROUSSEAU, PROFESSOR JACQUES, Montreal, Canada: 24 specimens of plants—Mexico (gift).

SCHIFF, WILLIAM A., Punta Gorda, British Honduras: 250 specimens of plants—British Honduras (gift).

SHERFF, DR. EARL E., Chicago: 411 specimens of plants—Hawaii (gift).

SMITH, F. W., Guasave, Mexico: 1 packet of seeds (gift).

SPANN, JAMES H., Summerville, South Carolina: tea flowers and fruit (gift).

STANDLEY, MISS MARGARET, Fort Myers, Florida: 1 specimen of fungus (gift).

STANDLEY, PAUL C., Chicago: 11 plant specimens—Indiana (gift).

STANFORD, LELAND, UNIVERSITY, California: 376 plant specimens—western United States and Mexico (exchange).

STATE COLLEGE OF WASHINGTON, Pullman, Washington: 100 plant specimens—northwestern United States (exchange).

STEINHEIMER, D. J., St. Louis, Missouri: 1 sample of elderberry wine (gift).

UNITED STATES NATIONAL MUSEUM, Washington, D.C.: 95 plant specimens (exchange).

UNIVERSITY OF ARKANSAS, DEPARTMENT OF BOTANY, Fayetteville, Arkansas: 177 specimens of plants—Arkansas (exchange).

UNIVERSITY OF CALIFORNIA, DEPARTMENT OF BOTANY, Berkeley, California: 1,353 plant specimens (exchange).

UNIVERSITY OF CALIFORNIA AT LOS ANGELES, Los Angeles, California: 89 specimens of plants—Guatemala (exchange).

UNIVERSITY OF MICHIGAN, DEPARTMENT OF BOTANY, Ann Arbor, Michigan: 8 microscopic slides of wood (gift); 1,385 plant specimens, mostly from Central America (exchange).

UNIVERSITY OF MINNESOTA, DEPARTMENT OF BOTANY, Minneapolis, Minnesota: 111 specimens of plants—Minnesota (exchange).

UNIVERSITY OF MONTANA, DEPARTMENT OF BOTANY, Missoula, Montana: 55 plant specimens—Montana (exchange).

UNIVERSITY OF WISCONSIN, DEPARTMENT OF BOTANY, Madison, Wisconsin: 1 plant specimen (exchange).

UPHOF, PROFESSOR J. C. TH., Winter Park, Florida: 1 plant specimen (gift).

VAN CLEEF BROTHERS, Chicago: 4 samples of rubber and materials used in processing it (gift).

VISKING CORPORATION, Chicago: 1 sample of processed abacá fiber (gift).

VON PLATEN-FOX COMPANY, Iron Mountain, Michigan: 1 board of tamarack (gift).

WHEELER, LOUIS C., La Verne, California: 11 plant specimens (gift).

WILLIAMS, ARTHUR R., Riverside, Illinois: 1 plant specimen (gift).

WILLIAMS, PERCY, Pretoria, South Africa: 5 fruits of *Hyphaena crinita* (gift).

YALE UNIVERSITY, SCHOOL OF FORESTRY, New Haven, Connecticut: 568

specimens of plants (gift); 131 wood samples (exchange).

YULE, ROBERT, Chicago: 1 sample of Chinese rice liquor (gift).

ZETEK, JAMES, Balboa, Panama Canal Zone: 344 specimens of plants—Barro Colorado Island (gift).

DEPARTMENT OF GEOLOGY—ACCESSIONS

ALASKA MUSEUM, Juneau, Alaska: 32 specimens minerals and ores—Alaska (gift).

BARBER, C. M., Hot Springs, Arkansas: 1 vertebra of *Tylosaur*; 4 invertebrate fossils—Arkadelphia, Arkansas (gift).

BARCLAY, GEORGE C., Newport News, Virginia: 6 fossil shells—Yorktown, Virginia (gift).

BAUER, J. A., Hot Springs, Arkansas: 1 group quartz crystals—Hot Springs, Arkansas (gift).

BECKER, A. G. and RAYMOND B., Clermont, Iowa: 81 specimens invertebrate fossils—Florida (gift).

BENSABOTT, R., INC., Chicago: 1 carved figure of quartz after crocidolite—South Africa (gift).

BRIGHAM, EDWARD M., Battle Creek, Michigan: 1 agate geode—Datil Mountains, Mexico (gift); 40 specimens volcanic material—Hawaii (exchange).

BROCK, C. S., Houston, Texas: 1 specimen smaragdite with corundum—North Carolina; 1 specimen wood opal—Texas (exchange).

BUKER, L. W., Provo, South Dakota: 1 specimen fossil wood; 5 specimens invertebrate fossils—South Dakota (gift).

CALVERT, EARL L., San Gabriel, California: 1 polished half of blue agate—Mohave Desert (exchange).

CARNEY, THOMAS A., Portland, Oregon: 4 specimens wood opal—north of Roosevelt, Washington (gift).

CHALMERS, WILLIAM J., Chicago: 15 specimens placer gold—California and Nevada (gift).

CLARK, WAYNE, Salt Lake City, Utah: 4 specimens concentric bleaching in

shale—Bad Lands of southern Utah (gift).

CLOYD, C. C., New Richmond, Wisconsin: 1 specimen *calymene niagarensis*—Chicago (gift).

CROSS, MISS GRACE BREWSTER, Chicago: 1 specimen sulphur; 1 specimen Pele's hair—Kilauea, Hawaii (gift).

DASTON, JOSEPH, Chicago: 1 tooth of *Merychippus*—Mexico (gift).

DURAND, ARTHUR FRANKLIN, Chicago: 2 specimens hollow hematite concretions—Saugatuck, Michigan (gift).

EL DORADO GOLD MINES, LTD., Northwest Territories, Canada: 3 specimens radium and silver ore—Great Bear Lake, Canada (gift).

FENTON, CARROLL LANE, West Liberty, Iowa: 12 specimens invertebrate fossils, 27 geological specimens—Glacier National Park and Waterton National Park (gift).

FIELD MUSEUM OF NATURAL HISTORY: Collected by Rudyerd Boulton (Straus West African Expedition): 5 specimens lava—Mount Cameroon, Africa.

Collected by Oliver C. Farrington (Second Marshall Field Brazilian Expedition): 1 specimen gold nugget, 1 specimen placer gravel with nugget—Bahia, Brazil.

Collected by Henry Field: 5 specimens limestone—Gibraltar.

Collected by Henry Field (Anthropological Expedition to the Near East, 1934): 1 specimen tin khawa—Amarah, Arabia.

Collected by Henry W. Nichols: 2 specimens quartzite—Ontario; 1 specimen free gold in quartz—Nova Scotia.

Collected by Phil C. Orr: 21 specimens cave products, 3 specimens rocks,

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20 specimens invertebrate fossils, 18 specimens geodes—Glasgow Junction, Kentucky.

Collected by Elmer S. Riggs: 2 specimens vertebrate fossils—Bad Lands, South Dakota; 1 specimen shell marl—Aurora, Illinois.

Collected by Sharat K. Roy: 66 specimens invertebrate fossils, 17 specimens fossil plants—Nebraska and Pennsylvania.

Collected by Karl P. Schmidt (Cornelius Crane Pacific Expedition of 1929): 1 specimen hematite—near Suva, Fiji Islands; (Leon Mandel Guatemala Expedition): 2 specimens lava; 2 specimens pumice—Guatemala.

Purchase: 6 specimens trilobites—Wichita, Kansas.

FIELD, HENRY, Chicago: 19 specimens minerals, 6 specimens rocks, 60 specimens invertebrate fossils; vertebra, jaws and teeth of *Ichthyosaurus*—England and Germany (gift).

GARDNER, WILLIAM, Chicago: 27 specimens minerals, 45 specimens invertebrate fossils and fossil plants—various localities (gift).

GUNNELL, E. MITCHELL, Galesburg, Illinois: 3 specimens minerals—various localities (gift); 1 specimen meteorite, 21 specimens minerals—various localities (exchange).

HOCKENBARY, ELMER, Interior, South Dakota: 3 specimens fossil molar teeth—Bad Lands, South Dakota (gift).

HUBER, HERMAN J., North Washington, Iowa: 1 limonite concretion, 1 sand-polished and etched agate—North Washington, Iowa (gift).

JOHNS-MANVILLE COMPANY, Chicago: 1 specimen asbestos board (gift).

JOHNSON, F. L., Frankfort, Indiana: 1 specimen rock weathering—Clinton County, Indiana (gift).

JONES, MRS. T. R., JR., Mena, Arkansas: 2 specimens dendrite on novaculite—Mena, Arkansas (gift).

KOPEC, EMIL, Ashland, Nebraska: 15 photographs (exchange).

KYANCUTTA MUSEUM, Kyancutta, South Australia: 5 specimens meteorites—Australia and Africa (exchange).

LANGE, W. A., Taylor, Texas: 1 specimen tripoli—Taylor, Texas (gift).

LEE, MISS VIRGINIA, Ableman, Wisconsin: 225 specimens fulgurite—Ableman, Wisconsin (gift).

LURAY CAVERNS CORPORATION, Luray, Virginia: 2 stalactites, 3 stalagmite deposits, 6 colored transparencies—Luray Cavern, Virginia (gift).

MARKHAM, FLOYD, Chicago: 12 specimens invertebrate fossils—Blue Island, Illinois (gift).

MARKHAM, FLOYD, Chicago; J. MANN, Oak Lawn, Illinois; J. LEE, Oak Lawn, Illinois; and SHARAT K. ROY, Chicago: 7 specimens invertebrate fossils—Blue Island, Illinois (gift).

MANLEY, JOHN A., New Brunswick, New Jersey: 2 limonite geodes—Middlesex County, New Jersey (gift).

MANN, J., Oak Lawn, Illinois: 2 specimens invertebrate fossils—Blue Island, Illinois (gift).

MARRIOTT, CHARLES, Sault Ste Marie, Michigan: 48 claystones—Sault Ste Marie, Michigan (gift).

MCINTOSH, FRANKLIN G., Beverly Hills, California: 8 specimens minerals—California (gift); 1 specimen mineral—California (exchange).

MIKIMOTO, KOKICHI, Tokyo, Japan: collection of culture pearls—Japan (gift).

MISSOURI COMMISSION TO A CENTURY OF PROGRESS, Jefferson City, Missouri: 9 specimens minerals—Washington County, Missouri (gift).

MITCHELL, PAUL H., Marietta, Illinois: 1 specimen stigmara—Marietta, Illinois (gift).

MUNROE, CONRAD, Chicago: 1 specimen mineral—unknown locality (gift).

NININGER, PROFESSOR H. H., Denver, Colorado: 1 slice of Sandia Mountains meteorite—New Mexico; 6 specimens meteorites—various localities (exchange).

OLBERG, PETER, Chicago: 1 specimen sequoia—Spitzbergen (gift).

POUGH, FRED, St. Louis, Missouri: 6 specimens minerals—various localities (exchange).

PRICE-GREEN, C., Montreal, Canada: 12 specimens gold ore, 1 specimen gold in quartz—Porcupine, Ontario, Canada (gift).

PRUITT, S. W., Niles, Michigan: 1 specimen tin ore—North Carolina; 2 lots minerals—Georgia (gift).

REZABEK, STANLEY, Chicago: 1 specimen diamond—South Africa (gift).

ROBBINS, GEORGE W., Valdez, Alaska: 1 mammoth tooth, 1 section of mammoth tusk—Fairbanks District, Alaska (gift).

ROBERTS, EDWIN A., Riverside, California: 2 specimens minerals—California (gift); 4 specimens minerals—California (exchange).

RODGERS, DR. E. A., Sainte Genevieve, Missouri: 1 specimen *Orthoceras*—Sainte Genevieve, Missouri (gift).

ROYAL ONTARIO MUSEUM OF PALEONTOLOGY, Toronto, Canada: 1 skull without jaws of *Anchiceratops ornatus*, 1 skull and jaws of *Edmontosaurus regalis*—Alberta, Canada (exchange).

SHAEFFER, WALTER L., Chicago: 1 specimen pumice—California (gift).

SHED, J. O., Norman, Oklahoma: 9 specimens barite roses—Norman, Oklahoma (gift).

SLOANE, ROBERT, and A. R. RENNER, Klamath Falls, Oregon: 1 specimen wood opal—Quartz Mountain, Oregon (gift).

STANDARD OIL COMPANY OF INDIANA, Chicago: 42 specimens petroleum prod-

ucts—Whiting, Indiana; 44 wax flow-ers, 36 dozen wax paper dishes, 6 dozen sheets paraffin paper (gift).

STANDARD OIL COMPANY OF NEW JERSEY, New York: 14 specimens vertebrate fossils—Argentina (gift).

SYLVANUS, EDWARD C., Chicago: 1 polished slab of Mexican onyx—Viroqua, Wisconsin (gift).

UNITED STATES POTASH COMPANY, New York: 5 specimens minerals, 1 specimen malpais lava—New Mexico (gift).

VON DRASEK, FRANK, Cicero, Illinois: 33 specimens minerals—Arkansas (gift).

WEIL, JACK, Chicago: 16 specimens minerals—Colorado (gift).

WHARTON, J. R., Roseburg, Oregon: 1 polished specimen of lignite in shale—Roseburg, Oregon (gift).

WHEELER, SEYMOUR, for his father, the late CHARLES P. WHEELER, Chicago: 37 specimens lead and zinc ore—Em-breeville, Tennessee (gift).

WITTER, ROBERT V., Bayers, Nebraska: 10 specimens minerals—Morrill County, Nebraska (gift).

WRIGHT, RANDALL, Chicago: 1 specimen orthoclase—San Diego, California (gift).

WRIGHT-HARGREAVES MINES, LTD., Ontario, Canada: 1 specimen gold ore—Kirkland Lake, Ontario (gift).

DEPARTMENT OF ZOOLOGY—ACCESSIONS

ACOSTA Y LARA, EDUARDO F., Montevideo, Uruguay: 3 bat skins and 4 skulls—Uruguay (gift).

ALDRICH, JACK, Oak Park, Illinois: 1 pickerel head—Lake Delavan, Wisconsin (gift).

ANDREWS, E. WYLLYS, IV, Chicago: 1 vampire bat, 1 frog, 1 lizard, 4 turtles, 30 snakes, 2 lots snake eggs and embryos, 15 insects and allies—Yucatan (gift).

BEBB, HERBERT, Chicago: 7 beetles—Chicago (exchange).

BIRKS, THOMAS K., Chicago: 1 tiger salamander—Okee, Wisconsin (gift).

BLACKBURN, MISS E. R., Merida, Yucatan: 5 lizards, 16 snakes—Merida, Yucatan (exchange).

BOWER, H. M., Evanston, Illinois: 2 butterflies, 2 moths—Utah and Wisconsin (gift).

BRISTOL, MAURICE L., Elgin, Illinois: 3 cicadas—Elgin, Illinois (gift).

BROWN, E. J., Oranjestad, Aruba: 122 insects—Ecuador (gift).

BRUNDAGE, EDWARD, Washington, Connecticut: 1 coral king snake, 24 insects and allies—various localities (gift).

BUCK, FRANK, A Century of Progress exposition: 1 East Indian monitor, 2 iguanas, 1 king cobra (gift).

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CARIBBEAN BIOLOGICAL LABORATORIES, Biloxi, Mississippi: 9 mammal skins and 8 skulls—Biloxi, Mississippi; 5 tree-frogs—Australia; 1 lizard—South Africa (gift).

CARNEGIE MUSEUM, Pittsburgh, Pennsylvania: 104 frogs and toads, 62 lizards, 35 snakes—Africa (exchange).

CASCARD, BEN, Chicago: 9 beetles—San Jacinto Mountains, California (gift).

CHALMERS, WILLIAM J., Chicago: 2 photographs of sable antelope and wildebeest, 1 map and guide to Kruger National Park (gift).

CHARLESTON MUSEUM, Charleston, South Carolina: 14 eastern chain pickerel—Berkeley County, South Carolina (gift).

CHICAGO ZOOLOGICAL SOCIETY, Brookfield, Illinois: 1 spiny anteater, 3 kangaroos—Australia and New Guinea; 1 brocket deer—Guatemala; 2 chimpanzees—Africa; 1 cormorant, 2 albatrosses—Galapagos Islands; 2 bower birds, 1 Asiatic starling; 2 snakes, 4 lizards—Australia; 3 snakes, 11 lizards—various localities (gift).

COLE, L. C., Chicago: 2 lizards—Navajo County, Arizona (gift).

CONOVER, BOARDMAN, Chicago: 1 mounted passenger pigeon—Ontario, Canada; 8 game birds—various localities; 3 bird skins—Belgian Congo (exchange); 1 green-winged teal—Illinois (gift).

CRAMER, MISS BERTHA, Highland Park, Illinois: 1 bat skeleton, 2 rail skeletons—Highland Park, Illinois (gift).

CRANDALL, ROBERT H., Phoenix, Arizona: 4 beetles—Phoenix, Arizona (gift).

CUTLER, BOB, Kenilworth, Illinois: 1 green snake—Glencoe, Illinois (gift).

DAVIS, D. DWIGHT, Naperville, Illinois: 4 snakes—DuPage County, Illinois (gift).

DICKEY, DONALD R., COLLECTION, Pasadena, California: 4 bird skins—various localities (gift).

DIXON, MRS. HOMER, Chicago: 1 mounted rabbit (gift).

DYBAS, HENRY, Chicago: 38 insects—Illinois and Indiana (gift).

DYBAS, HENRY, and FLOYD WRIER-CINSKI, Chicago: 1 massasauga—Beverly Shores, Indiana (gift).

FELIPPONE, DR. FLORENTINO, Montevideo, Uruguay: 5 bats—Uruguay (gift).

FENNEMA, MRS. MARIE, Chicago: 1 brown bat—Chicago (gift).

FIELD, MARSHALL, New York: 19 sculptured figures of British champion domestic animals (gift).

FIELD MUSEUM OF NATURAL HISTORY:

Collected by Rudyerd and Laura Boulton and Frank C. Wonder (Straus West African Expedition): 350 mammal skins, 502 skulls, 84 mammals in alcohol, 36 skeletons; 714 bird skins, 143 skeletons, 56 birds in alcohol, 14 birds' eggs, 4 boxes group accessories; 245 toads and frogs, 16 chameleons, 220 lizards, 37 snakes, 9 turtles, 6 crocodiles; 323 fishes—west Africa.

Collected by Henry Field and Richard A. Martin (Anthropological Expedition to the Near East, 1934): 127 mammals in alcohol, 7 mammal skins with 2 skeletons, 8 camel skulls, 23 bird skins, 1 set birds' eggs, 78 frogs and toads, 6 salamanders, 330 lizards, 133 snakes, 12 turtles, 20 fishes—southwestern Asia.

Collected by Albert J. Franzen: 2 immature mink—Cook County, Illinois.

Collected by Colin C. Sanborn: 4 toads, 2 frogs, 2 beetles—Lake County, Illinois.

Collected by Karl P. Schmidt, Frank J. W. Schmidt, Emmet R. Blake, Daniel Clark (Leon Mandel Guatemala Expedition): 380 mammal skins, 389 skulls, 111 mammals in alcohol, 23 skeletons; 875 bird skins, 1 skeleton, 30 boxes of nests; 341 frogs and toads, 662 salamanders, 603 lizards, 222 snakes, 17 turtles, 2 crocodiles; 130 fishes; 1,629 insects and lower invertebrates—Guatemala.

Purchases: 2 clawed frogs—Africa; 12 lizards—Balearic Islands; 1 clouded leopard skin—China; 2 pheasants—Illinois; 3 snow-leopard skins—India; 6 hummingbirds—Mexico; 2 sage grouse—Wyoming.

FORBIS, HOMER, Albany, Missouri: 4 sand wasps—Albany, Missouri (gift).

FRANZEN, ALBERT J., Chicago: 1 herring gull skeleton, 1 tern skeleton, 1 turtle, 21 insects, 3 parasitic worms—Illinois (gift).

FRAZIER, C. A., Stuart, Florida: 1 diamond-back rattlesnake—Stuart, Florida (gift).

FRIESSER, JULIUS, Chicago: 1 wasp—Chicago (gift).

GENERAL BIOLOGICAL SUPPLY HOUSE, Chicago: 1 clouded leopard skull—India (exchange); 3 snakes, 5 lizards—California; 4 frogs, 2 salamanders, 5 snakes—various localities; 1 lungfish—Africa (gift).

GERHARD, WILLIAM J., Chicago: 45 insects—Illinois and Indiana (gift).

GREGG, CLIFFORD C., Park Ridge, Illinois: 5 flies—Chicago (gift).

GREGORY, STEPHEN S., Winnetka, Illinois: 1 hawk skeleton—Winnetka, Illinois (gift).

HAMLETT, DR. G. W., Boston, Massachusetts: 23 bats—Brazil (gift).

HASKIN, J. R., Babson Park, Florida: 9 moths—Auburndale, Florida (gift).

HICKIN, N. E., Birmingham, England: 56 butterflies and moths—England (gift).

HINE, ASHLEY, Chicago: 6 mounted young ruffed grouse, 9 grouse skins—various localities (exchange).

HOLLEY, FRANCIS E., Lombard, Illinois: 32 insects—United States and Panama (gift).

HUBBELL, DR. THEODORE H., Gainesville, Florida: 6 camel crickets—Michigan and Ohio (gift).

JOB, DR. W., Popayan, Colombia: 42 insects—Colombia (gift).

KANE, MISS RUTH W., Chicago: 1 grosbeak skeleton—Chicago (gift).

KREER, J. G., Chicago: 7 beetles—Pine Bluff, Arkansas (gift).

LAYBOURNE, MISS PHYLLIS, Homewood, Illinois: 1 red-backed salamander—Shadeland, Indiana (gift).

LETL, FRANK H., Hazel Crest, Illinois: 1 opossum skeleton—Hazel Crest, Illinois (gift).

LILJEBLAD, EMIL, Chicago: 1 stag beetle—Java (gift).

LINCOLN PARK COMMISSIONERS, Chicago: 1 young orang utan, 1 griffon vulture, 1 plantain-eater (gift).

LIU, DR. C. C., Soochow, China: 34 frogs and toads, 6 lizards—China (gift).

LOWRIE, DONALD C., Chicago: 3 snakes, 1 lizard—Greenbriar, Tennessee (gift).

MCLAREN, JAMES, Highland Park, Illinois: 1 red bat—Highland Park, Illinois (gift).

MILLER, FRANK, Delavan, Wisconsin: 1 green snake—Delavan, Wisconsin (gift).

MUSEUM OF COMPARATIVE ZOOLOGY, Cambridge, Massachusetts: 6 bat skins with skulls—Africa and Brazil (exchange).

NECKER, WALTER L., Chicago: 1 pilot blacksnake—Turkey Run, Indiana (gift).

NEITZEL, WILLIAM, Chicago: 3 Fowler's toads—Stevensville, Michigan (gift).

OPPENHEIMER, HARRY D., Chicago: 1 mounted bat—Trinidad; 1 fish skeleton (gift).

PARK, DR. ORLANDO, Evanston, Illinois: 5 beetles—Urbana, Illinois (gift).

PEARSALL, GORDON S., Batavia, Illinois: 1 lesser yellowlegs, 5 snakes, 3 mole crickets—Willow Springs, Illinois (gift).

PEARSON, DR. J. F. W., Coral Gables, Florida: 13 frogs and toads—Coral Gables, Florida (gift).

PEATTIE, DR. DONALD C., Glenview, Illinois: 2 beetles—Glenview, Illinois (gift).

PERKINS, R. MARLIN, St. Louis, Missouri: 7 snakes—Brazil and Guatemala (gift).

PERLSTEIN, DR. M. A., Chicago: 1 garter snake—Beverly Hills, Illinois (gift).

PETERSON, MARTIN, Chicago: 1 armored catfish (gift).

PHILBY, H. ST. J., Mecca, Arabia: 1,043 insects and allies—Hejaz, Arabia (gift).

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PIRIE, JOHN T., Lake Forest, Illinois:
1 albino crow—Lake Forest, Illinois
(gift).

PIRNIE, M. D., Battle Creek, Michi-
gan: 1 American merganser, 2 Ameri-
can goldeneyes (gift).

PLATH, KARL, Chicago: 1 tanager—
South America; 2 bird skeletons (gift).

PRAY, LEON L., Homewood, Illinois:
1 mole—Harvey, Illinois (gift).

QUINN, J. H., Chicago: 1 gray bat—
Barren County, Kentucky (gift).

RAFFERTY, ROBERT, Chicago: 1
woodcock—Chicago (gift).

RICHARDS, MRS. CHARLES C.,
Chicago: 1,862 North American birds'
eggs (gift).

RUECKERT, ARTHUR G., Chicago: 1
flying squirrel—Ashland County, Wis-
consin (gift).

SANBORN, COLIN C., Highland Park,
Illinois: 1 white-footed mouse, 1 bug—
Highland Park, Illinois; 1 painted
turtle—Lake County, Illinois (gift).

SANFORD, DR. L. C., New Haven,
Connecticut: 1 Mexican bear skin
(gift).

SCHMIDT, F. J. W., Madison, Wis-
consin: 1 painted turtle—Ashland
County, Wisconsin (gift).

SHEDD, JOHN G., AQUARIUM, Chicago:
86 fishes—various localities (gift).

SLEVIN, C. A., Chicago: 1 tarantula
—Rogers, Arkansas (gift).

SPERRY, JOHN L., Riverside, Cali-
fornia: 6 sphinx moths—California
(gift).

STANDLEY, MRS. FLORENCE R., Fort
Myers, Florida: 3 bugs—Fort Myers,
Florida (gift).

SUGDEN, J. W., Salt Lake City,
Utah: 11 moths—Salt Lake County,
Utah (gift).

SULLIVAN, DOUGLAS, Chicago: 1
spider—Kirkwood, Missouri (gift).

SURGHOR, COLONEL V. H., Chicago:
1 mountain sheep head—Alaska (gift).

SWANSON, GUSTAV, Minneapolis,
Minnesota: 8 frogs—Minnesota (gift).

UNITED STATES NATIONAL MUSEUM,
Washington, D. C.: 1 gibbon skin and
skeleton—Borneo (exchange).

WALKER, CHARLES F., Ann Arbor,
Michigan: 2 frogs—Biloxi, Mississippi
(exchange).

WALLEN, LIEUTENANT SEELEY A.,
Yardley, Pennsylvania: 1 wild boar
skin with skull, 1 jungle fowl skin—
Philippine Islands (gift).

WALPOLE, STEWART J., Chicago: 1
pocket gopher skin and skull—Ternax,
Yucatan (gift).

WALTON, MRS. E., Highland Park,
Illinois: 2 black-throated green war-
blers, 5 bird skeletons—Highland Park
(gift).

WARKE, THOMAS, Chicago: 1 phoebe,
1 oven bird—Chicago (gift).

WATSON, DONALD K., Chicago: 5
beetles—Dallas County, Texas (gift).

WEED, ALFRED C., Chicago: 39
insects—Chicago (gift).

WHEELER, LESLIE, Lake Forest,
Illinois: 1 red-tailed hawk—Henry,
Illinois; 1 eagle, 9 hawks, 3 owls—
Korea; 7 hawks, 1 owl—China; 22
hawks, 6 owls, 4 caracara, 1 vulture
—Mexico; 248 bird skins—Chitau,
Angola (gift).

WOLCOTT, ALBERT B., Downers
Grove, Illinois: 427 insects—Illinois
(gift).

WOOD, WILLIAM C., New York: 20
tiger beetles—various localities (gift).

ZIMMERMAN, ROBERT, Chicago: 1
pair shark jaws—Hawaii (gift).

RAYMOND FOUNDATION—ACCESSIONS

FIELD MUSEUM OF NATURAL HISTORY:
From Division of Photography:
404 slides; 375 feet of 16-mm. film

taken at Brookfield Zoo (purchase).

MANDEL, LEON, Chicago: 5,000 feet
of 35-mm. film on Guatemala (gift).

DIVISION OF PHOTOGRAPHY—ACCESSIONS

JENNINGS, JOHN F., Chicago: 796 negatives of natives, seascapes, landscapes, and general views—west Africa (gift).

FIELD MUSEUM OF NATURAL HISTORY:

Made by Division of Photography: 20,137 prints, 1,737 negatives, 508 lantern slides, 150 enlargements, and 28 transparent labels.

Developed for expeditions: 535 negatives.

From Field Museum Archaeological Expedition to the Near East (made by Richard A. Martin): 3,272 negatives of natives, taken in Iraq; 2,030 motion picture negatives, taken in Iraq; 756 negatives of natives, taken in Persia; 100 negatives of natives, taken in Transjordan, Syria, and Palestine; 576 negatives of natives, taken in Union of Soviet Socialist Republics.

Made by Bryan Patterson: 30 negatives of general views in Colorado.

LIBRARY—ACCESSIONS

List of Donors of Books

INSTITUTIONS

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| Agricultural Experiment Station, Agricultural College, Mississippi. | Chicago Zoological Society, Brookfield, Illinois. |
| Agricultural Experiment Station, Auburn, Alabama. | Children's Museum, Boston, Massachusetts. |
| Agricultural Experiment Station, New Haven, Connecticut. | Chinese National Committee on Intellectual Cooperation, Shanghai, China. |
| Alaska Agricultural Experiment Station, Washington, D.C. | Chinese Trading Company, Chicago. |
| American Friends of China, Chicago. | Cranbrook Institute of Science, Bloomfield Hills, Michigan. |
| American Jewish Committee, New York. | Denver Art Museum, Denver, Colorado. |
| American Mining Congress, Washington, D.C. | Deutsche Fischwirtschaft, Berlin, Germany. |
| <i>Atlas des Champignons de l'Europe</i> , Prague, Czechoslovakia. | Drew University, Madison, New Jersey. |
| Bausch and Lomb Optical Company, Rochester, New York. | Emergency Conservation Committee, New York. |
| <i>Black Diamond</i> , Chicago. | Erie Public Library and Museum, Erie, Pennsylvania. |
| <i>Black Hills Engineer</i> , Rapid City, South Dakota. | Fontana Company, Mario A., Montevideo, Uruguay. |
| British School of Archaeology, Jerusalem, Palestine. | Friedländer and Son, Berlin, Germany. |
| Bunrika Daigaku, Tokyo, Japan. | Garden Club of America, New York. |
| <i>Canadian Mining Journal</i> , Gardenvale, Canada. | General Biological Supply House, Chicago. |
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- Scientific American*, New York.
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 Ericsson, Dewey A.
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 Ericsson, Walter H.
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 Etten, Henry C.
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 Thomas
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 Evans, David J.
 Evans, Eliot H.
 Evans, Hon. Evan A.
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 Filek, August
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 Metcalf
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 Flexner, Washington
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 Fox, Jacob Logan
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 Freeman, Charles Y.
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 Nichols, S. F.
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- Noyes, A. H.
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 Oberfelder, Walter S.
 O'Brien, Frank J.
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 Oppenheimer, Julius
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- Parker, Norman S.
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 Sinclair, Dr. J. Frank
 Singer, Mrs. Mortimer H.
 Sitzler, Dr. L. Grace Powell
 Skooglund, David
 Sleeper, Mrs. Olive C.
 Slocum, J. E.
 Smith, Mrs. C. R.
 Smith, Mrs. Emery J.
 Smith, Mrs. Frank S.
 Smith, Franklin P.
 Smith, Harold Byron
 Smith, Jens
 Smith, Jesse E.
 Smith, Mrs. Katherine Walker
 Smith, Mrs. Kinney
 Smith, Samuel K.
 Smith, Sidney
 Smith, Mrs. Theodore White
- Smith, Walter Bourne
 Smith, Walter Byron
 Smith, Mrs. William A.
 Smith, Z. Erol
 Smullen, Alexander
 Snow, Edgar M.
 Snow, Fred A.
 Snyder, Harry
 Socrates, Nicholas
 Solem, Dr. George O.
 Sonnenschein, Edward
 Sonnenschein, Hugo
 Sonnenschein, Dr. Robert
 Sonneveld, Jacob
 Soper, Henry M.
 Soper, James P., Jr.
 Sopkin, Mrs. Setia H.
 Soravia, Joseph
 Sorensen, James
 Spencer, Mrs. William M.
 Spiegel, Mrs. Frederick W.
 Spiegel, Mrs. Mae O.
 Spitz, Joel
 Spitz, Leo
 Spitzglass, Mrs. Leonard M.
 Spohn, John F.
 Spoor, Mrs. John A.
 Sprague, Dr. John P.
 Springer, Mrs. Samuel
 Squires, John G.
 Staack, Otto C.
 Stacey, Mrs. Thomas I.
 Staley, Miss Mary B.
 Stanton, Dr. E. M.
 Stanton, Edgar
 Stanton, Henry T.
 Starrs, Joel
 Stearns, Mrs. Richard I.
 Stebbins, Fred J.
 Steffens, Ralph Sutherland
 Steffey, David R.
 Stein, Benjamin F.
 Stein, Dr. Irving
 Stein, L. Montefiore
 Stenson, Frank R.
 Sterba, Dr. Joseph V.
 Stern, Alfred Whitall
 Stern, David B.
 Stern, Felix
 Stern, Maurice S.
 Stern, Oscar D.
 Stevens, Delmar A.
 Stevens, Edward J.
 Stevens, Elmer T.
 Stevens, Harold L.
 Stevens, James W.
 Stevens, Mrs. James W.
 Stevens, R. G.
 Stevenson, Dr. Alexander F.

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 Nannie
 Stewart, Miss Eglantine
 Daisy
 Stewart, James S.
 Stewart, Miss Mercedes
 Graeme
 Stibolt, Mrs. Carl B.
 Stiger, Charles W.
 Stirling, Miss Dorothy
 Stockton, Eugene M.
 Stockton, Miss Josephine
 Stone, Mrs. Jacob S.
 Strandberg, Erik P.
 Straus, David
 Straus, Martin L.
 Straus, Melvin L.
 Straus, S. J. T.
 Strauss, Dr. Alfred A.
 Strauss, Henry X.
 Strauss, John L.
 Street, Mrs. Charles A.
 Strobel, Charles L.
 Stromberg, Charles J.
 Strong, Edmund H.
 Strong, Mrs. Walter A.
 Strotz, Harold C.
 Struby, Mrs. Walter V.
 Stulik, Dr. Charles
 Sturges, Hollister
 Sturges, Solomon
 Sturtevant, Henry D.
 Suekoff, Louis A.
 Sullivan, Hon. John J.
 Sulzberger, Frank L.
 Sutcliffe, Mrs. Gary
 Sutherland, William
 Sutton, Harold I.
 Swan, Oscar H.
 Swanson, Joseph E.
 Swartchild, Edward G.
 Swartchild, William G.
 Swenson, S. P. O.
 Swett, Robert Wheeler
 Swift, Alden B.
 Swift, Mrs. Alden B.
 Swift, Edward F., Jr.
 Sykes, Mrs. Wilfred

 Taft, John H.
 Taft, Mrs. Oren E.
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 Tatge, Mrs. Gustavus J.
 Taylor, Charles C.
 Taylor, George Halleck
 Taylor, J. H.
 Teagle, E. W.
 Templeton, Stuart J.
 Templeton, Walter L.
 Templeton, Mrs. William
 Terry, Foss Bell

 Teter, Lucius
 Thatcher, Everett A.
 Theobald, Dr. John J.
 Thomas, Emmet A.
 Thomas, Frank W.
 Thomas, Mrs. Harry L.
 Thomas, Dr. William A.
 Thompson, Arthur H.
 Thompson, Charles E.
 Thompson, Charles F.
 Thompson, Edward F.
 Thompson, Fred L.
 Thompson, Dr. George F.
 Thompson, Mrs. John R.
 Thompson, John R., Jr.
 Thompson, Mrs. Leverett
 Thorne, Hallett W.
 Thorne, James W.
 Thornton, Dr. Francis E.
 Thorp, Harry W.
 Thresher, C. J.
 Thulin, F. A.
 Tighe, Mrs. Bryan G.
 Tilden, Averill
 Tilden, Louis Edward
 Tilt, Charles A.
 Tobias, Clayton H.
 Torbet, A. W.
 Touchstone, John
 Henry
 Towle, Leroy C.
 Towler, Kenneth F.
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 Trainer, J. Milton
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 Tredwell, John
 Tripp, Chester D.
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 Tucker, S. A.
 Turner, Alfred M.
 Turner, Tracy L.
 Tuthill, Mrs. Beulah L.
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 Tuttle, Henry Emerson
 Tuttle, Mrs. Henry N.
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 Tyler, Mrs. Orson K.
 Tyrrell, Mrs. Percy

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 Ullman, Mrs. N. J.
 Upham, Mrs. Frederic W.

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 Valentine, Mrs.
 May L.
 Valentine, Patrick A.
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 VanCleaf, Paul

 VanDeventer, Christopher
 VanNess, Gardiner B.
 VanSchaick, Gerard
 VanWinkle, James Z.
 VanZwoll, Henry B.
 Vaughan, Leonard H.
 Vawter, William A., II
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 Veeder, Miss Jessie
 Vehe, Dr. K. L.
 Vehon, Morris
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 Vierling, Louis
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 Volicas, Dr. John N.
 Volk, Mrs. John H.
 VonColditz, Dr. G.
 Thomsen-
 VonGlahn, Mrs. August
 Voorhees, Mrs. Condit
 Vopicka, Charles J.

 Wagner, Fritz, Jr.
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 Charles R.
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 Waller, J. Alexander
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 Wallovick, J. H.
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 Warfield, Edwin A.
 Warner, Mrs. John Elliot
 Warren, Allyn D.
 Warren, J. Latham
 Warren, Paul C.
 Warren, Paul G.
 Warren, Walter G.
 Warwick, W. E.
 Washburne, Clarke
 Washburne,
 Hempstead, Jr.
 Washington, Laurence W.
 Wassell, Joseph
 Waterman, Dr. A. H.
 Watson, William Upton
 Watts, Harry C.
 Watzek, J. W., Jr.

Waud, E. P.
 Wayman, Charles A. G.
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 Weber, Bernard F.
 Weber, Frank C.
 Webster, Arthur L.
 Webster, Miss Helen R.
 Webster, Dr. Ralph W.
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 Weiler, Rudolph
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 Weissenbach, Mrs.
 Minna K.
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 Weisskopf, Dr. Max A.
 Wells, Arthur H.
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 Wells, John E.
 Wells, Preston A.
 Wells, Thomas E.
 Wells, Mrs. Thomas E.
 Wendell, Barrett, Jr.
 Wendell, Miss Josephine
 A.
 Wentworth, Mrs. Moses J.
 Werner, Frank A.
 West, J. Roy
 West, Miss Mary Sylvia
 Westerfeld, Simon
 Westrich, Miss T. C.
 Wetten, Albert H.
 Wettling, Louis E.
 Weymer, Earl M.
 Whealan, Emmett P.
 Wheeler, George A.
 Wheeler, Leo W.
 Wheeler, Leslie
 Wheeler, Mrs. Robert C.
 Whinery, Charles C.
 White, Harold F.
 White, Mrs. James C.

White, James E.
 White, Joseph J.
 White, Richard T.
 White, Sanford B.
 White, Selden Freeman
 Whitehouse, Howard D.
 Whiting, Mrs. Adele H.
 Whiting, J. H.
 Whiting, Lawrence H.
 Wiborg, Frank B.
 Widdicombe, Mrs. R. A.
 Wieland, Charles J.
 Wieland, Mrs. George C.
 Wienhoeber, George V.
 Wilder, Harold, Jr.
 Wilder, Mrs. John E.
 Wilder, Mrs. T. E.
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 Wilkins, George Lester
 Wilkins, Miss Ruth
 Wilkinson, Mrs.
 George L.
 Wilkinson, John C.
 Willey, Mrs. Charles B.
 Williams, Dr. A.
 Wilberforce
 Williams, Miss
 Anna P.
 Williams, Harry
 Lee
 Williams, J. M.
 Williams, Lucian M.
 Williamson, George H.
 Willis, Paul, Jr.
 Willis, Thomas H.
 Wills, H. E.
 Wilms, Herman P.
 Wilson, Mrs. E. Crane
 Wilson, Harry Bertram
 Wilson, Mrs. John R.
 Wilson, Miss Lillian M.
 Wilson, Morris Karl
 Wilson, Mrs. Robert
 Conover
 Wilson, Mrs. Robert E.
 Winans, Frank F.
 Windsor, H. H., Jr.
 Winston, Mrs. Bertram
 M.

Winston, Hampden
 Winston, James H.
 Winter, Irving
 Wojtalewicz, Rev.
 Francis M.
 Woley, Dr. Harry P.
 Wolf, Mrs. Albert H.
 Wolf, Henry M.
 Wolf, Walter B.
 Wolff, Louis
 Wood, Mrs. Gertrude D.
 Wood, Mrs. Harold F.
 Wood, John H.
 Wood, Kay, Jr.
 Wood, Robert E.
 Wood, William G.
 Woodmansee, Fay
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 Woods, Weightstill
 Worcester, Mrs.
 Charles H.
 Work, Robert
 Worth, Miss Helen E.
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 Wright, Warren
 Wrigley, Mrs. Charles W.
 Wunderle, H. O.
 Wyeth, Harry B.

Yegge, C. Fred
 Yerkes, Richard W.
 Yondorf, John David
 Yondorf, Milton S.
 Yondorf, Milton S., Jr.
 Young, George W.
 Young, Hugh E.

Zabel, Max W.
 Zapel, Elmer
 Zeisler, Mrs. Erwin P.
 Zerler, Charles F.
 Ziebarth, Charles A.
 Zimmer, Mrs.
 Rudolph E.
 Zimmerman, Herbert P.
 Zimmerman, Louis W.
 Zork, David
 Zulfer, P. M.

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 Bohn, Mrs. Bertha
 Bowly
 Born, Moses
 Bingham, Miss Florence
 M.
 Bullock, Carl C.
 Case, Elmer G.

Cratty, Mrs. Josiah
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 Dewey, Albert B., Sr.
 Donnelley, Mrs. R. R.
 Elcock, Edward G.
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 Haugan, Charles M.
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 Magwire, Mrs. Mary F.
 Mandel, Mrs. Frederick
 L.

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Mohr, Edward

Nason, Albert J.
Nelson, Edward A.
Nichols, George P.

Otis, Lucius J.

Paschen, Mrs. Annette A.

Rueckheim, F. W.

Sauer, William A.

Scheunemann, Robert G.
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Thomas, Edward H.

Wood, John G.
Wormser, Leo F.

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Alexander, Harry T.
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Alt, George E.
Alzheimer, Ben J.
Alton, Robert Leslie
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Amory, W. Austin
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Anderson, Mrs. A. W.
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Anderson, Arch W.
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 Arnold, George G.
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Babcock, Charles S.
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 Bean, Edward H.
 Becker, Mrs. Herbert W.
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 Beers-Jones, L.
 Beidler, Augustus F.
 Beifus, Morris
 Bell, George Irving
 Bell, Hayden N.
 Bennett, Edward H.
 Bennett, Mrs. Reid M.
 Bennington, Harold
 Benson, Mrs. T. R.
 Bentley, Richard
 Berg, Sigard E.
 Berger, Edward A.
 Berger, Dr. John M.
 Berger, R. O.
 Bergh, Ross F.
 Berlitzheimer, Miss Lily A.
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 Bestel, Oliver A.
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 Binz, William C.
 Birkenstein, Louis
 Bishop, Mrs. W. H.
 Black, Carl M.
 Black, Herman
 Black, Peter M.
 Blackburn, Burr
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 Blomquist, Alfred
 Blue, Dr. Robert
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 Bobb, Dwight S.
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 Bolin, Mrs. George
 Bond, William A.
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 Borwell, Mrs. Robert C.
 Bothman, Dr. Louis
 Bournique, Alvar L.
 Bowen, Joseph T., Jr.
 Bowman, Jay
 Bowman, Mrs. Jay
 Boyd, Mrs. T. Kenneth
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 Brachvogel, Mrs.

 Christiana
 Bradley, Herbert E.
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 Brainerd, Mrs. David E.
 Brashears, J. W.
 Braudy, Mrs. Louis C.
 Brewster, William E.
 Briney, Mrs. H. C.
 Brodt, Irwin W.
 Broome, John Spoor
 Broome, Mrs. Thornhill
 Broomell, Chester C.
 Brower, Jule F.
 Brown, Alvia K.
 Brown, Mrs. Anna K.
 Brown, Miss Ella W.
 Brown, Mrs. Everett C.
 Brown, Gerard S.
 Brown, H. A.
 Brown, H. S.
 Brown, J. D.
 Brown, Joseph F.
 Brown, Mrs. W. Gray
 Brown, William A.
 Browne, Theodore C.
 Brucker, Dr. Edward A.
 Brucker, Dr. Matthew W.
 Bruhnke, A. C.
 Brumley, Daniel Joseph
 Brunker, A. R.
 Brunt, J. P.
 Bryan, H. H.
 Buchbinder, Dr. J. R.
 Buchen, Walther
 Buck, Nelson Earl
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Buckingham, Mrs. John
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 Buell, James H.
 Buhlig, Paul
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 Bunck, Edward C.
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 Burnet, Mrs. W. A.
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 Burnham, Hubert
 Burns, Mrs. John S.
 Burrige, Mrs. Howard J.
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 Busch, Francis X.
 Buswell, Mrs. Henry Lee
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 Butler, Mrs. Lloyd E.
 Byfield, Ernest L.
 Byrnes, William Jerome

Cable, Arthur G.
 Cahill, William A.
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 Cameron, Ossian
 Camp, Benjamin B.
 Campbell, Argyle
 Campbell, Donald A.
 Campbell, Mrs. John G.
 Campe, Frank O.
 Canavan, J. Newell
 Cardelli, Mrs. Giovanni
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 Carnahan, Mrs. Glen C.
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 Carpenter, John Alden
 Carr, Dr. James G.
 Carr, John O.
 Carrington, Edmund
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 Carter, John A., Jr.
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 Castle, Sydney
 Caswell, Mrs. A. B.
 Cervenka, John A.
 Chandler, Charles H.
 Chandler, Dr. Fremont
 A.
 Chandler, George M.
 Chapin, Rufus F.
 Cherry, Mrs. Walter L.
 Chesrow, Dr. Eugene
 Joseph
 Chessman, L. W.

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- Chester, Miss Virginia
 Childs, Kent C.
 Childs, Theron W.
 Chinnock, Mrs. Ronald L.
 Chrissinger, Horace B.
 Christensen, Henry C.
 Clague, Mrs. Stanley, Sr.
 Clark, C. P.
 Clark, Charles T.
 Clark, Mrs. Ralph E.
 Clark, Robert H.
 Clarke, Broadus J.
 Clarke, David R.
 Claussen, Edmund J.
 Clayton, Mrs.
 Anna G.
 Clements, Rev.
 Robert
 Clemer, J. H.
 Cleveland, Mrs. A. F.
 Clifford, Thomas B.
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 Clithero, W. S.
 Clizbe, Mrs. F. O.
 Coburn, Alonzo J.
 Cochrane, Mrs. A. B.
 Coe, Frank Galt
 Coen, T. M.
 Coffman, A. B.
 Cohen, A. E.
 Cole, Lawrence A.
 Coleman, Mrs.
 Adelbert E.
 Coleman, Algernon
 Coleman, B. R.
 Coleman, Hamilton
 Collins, Arthur W.
 Collins, Charles W.
 Collins, Mrs. Frank P.
 Collins, Dr. Rufus G.
 Condon, Thomas J.
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 Cook, Sidney A.
 Coolidge, Dr. Edgar D.
 Coon, Robert E.
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 Corper, Erwin
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 Craig, Mrs. Alfred E.
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 Crellin, Miss Mary F.
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 James A.
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 Cunningham, Robert
 Cunningham, Robert M.
 Cunningham, Secor
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 Cuscaden, Fred A.
 Cushman, Barney
 Dahle, Isak
 Dalmar, Hugo
 Danielson, Reuben G.
 Darrow, Paul E.
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 Jr.
 David, Sigmund W.
 Davies, William B.
 Davis, Alexander M.
 Davis, Mrs. Charles P.
 Davis, Charles S.
 Davis, Mrs. F. Ben
 Davis, Paul H.
 Davis, Ralph W.
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 Deneen, Robert J.
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 Porter
 Denison, John W.
 Dennis, Willard P.
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 Donnelley, Thorne
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 Dreyfus, Maurice M.
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 Dulsky, Louis
 Dummer, Mrs. William
 F.
 Dunbaugh, Harry J.
 Duncan, W. S.
 Durr, Mrs. Herbert A.
 Easter, Adolph H.
 Eaton, Leland E.
 Edgar, David W.
 Edmonds, H. O.
 Egloff, Gustav
 Ehrman, Walter E.
 Ehrmann, Dr. Fred J. E.
 Eisendrath, Miss
 Elsa B.
 Eldred, Mrs. Harriot W.
 Elfborg, Mrs. Henry
 Elich, Mrs. Herman
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 Elliott, Dr. Clinton A.
 Elliott, Francke C.
 Elmslie, George G.
 Emerson, R. W.
 Emery, Mrs. William H.
 Emig, Howard A.
 Engelhart, Frank C.
 Englander, Mrs.
 Marcelite S.
 Enos, Earl E.
 Epstein, Mrs. Arnold
 Erd, Arthur A.
 Erickson, Elmer
 Erickson, H. E.
 Erickson, Samuel E.
 Erminger, Mrs. H. B., Jr.
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 Estes, Clarence E.
 Ettelson, Samuel A.
 Eulass, Elmer A.
 Evans, Mrs. Arthur T.
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 Ewing, Davis
 Exo, Arnold H.
 Fabrice, Edward H.
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 Farquharson,
 William J.
 Farrier, Clarence W.
 Farwell, Albert D.
 Farwell, Edward P.
 Faulkner, Dr. Louis
 Felsenthal, Herman
 Fenner, W. L.
 Fenton, J. R.
 Ferry, Mrs. Frank
 Field, Heman H.
 Field, Mrs. J. A.
 Fies, Mrs. E. E.
 Findlay, Dr. Ephraim K.
 Fisher, Thomas H.

Fisher, Mrs. W. A.
 Fitch, Thomas
 Fitzpatrick, Mrs. T. F.
 Flanagan, William C.
 Fleming, Edward J.
 Fleming, Mrs. Joseph B.
 Flood, E. J.
 Flynn, M. J.
 Flynn, Maurice J.
 Foley, Mrs. John Burton
 Follett, Dwight W.
 Folsom, Mrs. William R.
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 Ford, Mrs. Edwin S.
 Forrest, Mauley
 Forrester, Mrs. W. W.
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 Fowler, Edgar C.
 Fowler, Gordon F.
 Fowler, Harold A.
 Fowler, Walter E.
 Fox, Professor Philip
 Frank, John M.
 Frank, Miss Margaret
 Frazee, Seward C.
 Freehof, Dr. Solomon B.
 Freiler, Abraham J.
 Fremont, Miss Ruby
 French, Bayless W.
 French, Dr. Thomas M.
 Freund, Erwin O.
 Frieder, Edward N.
 Friedrichs, Mrs. Edith E.
 Fuller, Mrs. Eugene W.
 Fuller, Dr. George
 Damon

Gable, Harley O.
 Gabriellian, Dr.
 Alexander
 Gale, Abram
 Gallagher, Miss Grace
 Gallauer, Carl
 Galloway, Dr. Charles E.
 Gano, David R.
 Gantner, Edward George
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 Gardner, Robert H.
 Gates, Philip R.
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 Thomas F.
 Gibbs, Dr. William W.
 Gibson, Joseph R.
 Gilchrist, Miss Harriet F.
 Giles, Miss A. H.
 Gilkes, William H.
 Glader, Frank J.
 Gladish, David F.
 Gledhill, Edward
 Glover, John
 Glynn, Mrs. John E.
 Goble, Mrs. E. R.

Goddard, Mrs. Convers
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 Goldie, George G.
 Golding, Robert N.
 Goldman, Mrs. Louis
 Goldsmith, Henry M.
 Goodell, Mrs. Charles E.
 Gowenlock, Mrs. T. R.
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 Grauer, Milton H.
 Graver, Philip S.
 Graves, Mrs. B. C.
 Graves, Mrs. George E.
 Grawoig, Allen
 Gray, William A.
 Gray, Mrs. William S.
 Graydon, Charles E.
 Green, Walter H.
 Greenebaum, Mrs. Esther
 Greenhouse, Jacob
 Greenlee, William B.
 Greenlee, Mrs. Ralph S.
 Gregg, John Wyatt
 Gregory, Mrs. Robert B.
 Grein, Joseph
 Grey, Newton F.
 Gridley, Mrs. Martin M.
 Griesel, Edward T.
 Griffith, Mrs. G. H.
 Groebe, Louis G.
 Guettler, H. W.
 Guilleams, John R.
 Guinan, James J.
 Gunderson, Mrs.
 George O.
 Gunkel, George F.
 Gunnar, Mrs. H. P.

Hagey, J. F.
 Hajek, Henry F.
 Hall, Arthur B.
 Hall, Harold
 Hall, Harry
 Hall, Henry C.
 Hall, J. M.
 Hall, Louis W.
 Hamblen, J. C.
 Hamilton, Mrs.
 Chester F.
 Hamilton, Hugo A.
 Hamilton, J. R.
 Hamline, Mrs.
 John H.
 Hammond, Mrs. I. L.
 Hann, J. Roberts
 Hansen, Adolph H.
 Hanson, August E.
 Hanson, Martin J.
 Hardenbrook, Mrs. Burt
 C.
 Harding, Mrs. Charles F.
 Hardy, Henry G.

Harmon, Hubert P.
 Harpel, Mrs. Charles J.
 Harrigan, E. J.
 Harriman, Frank B.
 Harris, Ewart
 Harris, Frank F.
 Harrison, William H.
 Harrold, James P.
 Harshaw, Myron T.
 Hart, Mrs. G. H.
 Hart, Mrs. Harry
 Hart, Louis E.
 Hart, Max A.
 Hart, Robert H.
 Hart, Mrs. Walter H.
 Hartigan, Clare
 Hartwick, H. J.
 Hartz, W. Homer
 Harvey, Byron S.
 Harvey, Mrs. Harold B.
 Haskell, L. A.
 Haskins, Mrs. Virginia W.
 Hattstaedt, Mrs.
 John J.
 Hauter, Mrs. A. N.
 Haven, Mrs. Alfred C.
 Hawkes, Joseph B.
 Hawkinson, Dr. Oscar
 Hawthorne, Vaughn R.
 Healy, John J.
 Hebel, Hon. Oscar
 Heckel, Edmund P.
 Hedman, Mrs. C. M.
 Heg, Ernest
 Heide, Bernard H.
 Heifetz, Samuel
 Heinz, W. W.
 Helebrandt, Louis
 Heller, Ward
 Hemington, Dr. Francis
 Henderson, B. E.
 Henderson, Edward E.
 Hendrickson, Magnus
 Hennessy, James
 Henning, Charles F.
 Henning, Mrs. Helen E.
 Henriksen, H. M.
 Henry, C. Duff
 Henschel, Edmund C.
 Herlihy, Frank J.
 Herring, Garner
 Hertz, Mrs. John D.
 Hertzberg, Edward
 Hess, Edward J.
 Hess, Mrs. J. H.
 Hess, Sol H.
 Hessler, John B.
 Heubach, Mrs. Lydia
 Heym, Dr. A.
 Heymann, L. H.
 Hibbard, Angus S.
 Hicks, E. L., Jr.

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- Hicks, Mrs. Ernest H.
 High, Mrs. George H.
 High, Shirley T.
 Hill, Mrs. Cyrus G.
 Hill, Mrs. Frank L.
 Hill, Miss Meda A.
 Hilliker, Miss Ray
 Hills, Edward R.
 Hillyer, John T.
 Hilpert, Dr. Willis S.
 Hilton, Henry H.
 Hirsh, Morris Henry
 Hoadley, Mrs. Arthur G.
 Hoag, Mrs. Junius C.
 Hobson, Professor Asher
 Hochstadter, Gustav
 Hodge, Thomas P.
 Hoff, C. W.
 Holabird, John A.
 Holden, Charles R.
 Holm, Gottfried
 Holman, Scott A.
 Holt, James A.
 Holt, McPherson
 Holter, Charles C.
 Honecker, Ralph H.
 Hooge, Dr. Ludwig F.
 Hooper, A. F.
 Hoover, Mrs. Frank K.
 Hopkins, James M., Jr.
 Horween, Ralph
 Hoskinson, James M.
 Houston, Mrs. Thomas J
 Howard, P. S.
 Howland, Mrs. Elvin W.
 Hoyt, N. Landon, Jr.
 Hoyt, William M., II
 Hubachek, FrankBrookes
 Hubbell, Mrs. Pearl
 Ecker
 Hubbell, William J.
 Huebsch, Mrs. Helen M.
 Huettmann, Fred
 Huffacker, Mrs.
 O'Bannon L.
 Hufty, Mrs. F. P.
 Huggins, Dr. Ben H.
 Hughes, George A.
 Hughitt, Mrs. Marvin
 Huguenor, Lloyd B.
 Humphrey, H. K.
 Hunt, George C.
 Hurd, Harry B.
 Hurley, Frank J.
 Hutchinson, Mrs. C. L.
 Hyman, Mrs. David A.
 Hyndman, Mrs. A. H.
 Hyslop, Dr. R. J.

 Igoe, Mrs. Michael L.
 Illian, Arthur J. G.

 Ingersoll, Stephen L.
 Irwin, Amory T.

 Jackson, R. W.
 Jackson, W. H.
 Jackson, William F.
 Jacobs, E. G.
 Jacobs, Walter H.
 Jacobus, Graham B.
 James, Dr. R. L.
 Jamieson, Norman R.
 Janata, Louis J.
 Jaques, Mrs. Louis T.
 Jarchow, Mrs. C. E.
 Jarvis, William B.
 Jeffers, Roy S.
 Jenner, Mrs. Austin
 Jennings, Mrs. C. A.
 Jennings, S. C.
 Jernberg, Carl L.
 Jewell, Miss Helen M.
 Jewett, Miss Josephine J.
 Jicha, R. Charles
 Johnson, B. W.
 Johnson, Edmund G.
 Johnson, Frank
 Johnson, Mrs. Herbert S.
 Johnson, Mrs. Perry R.
 Johnson, Mrs. W. B.
 Johnston, Ira B.
 Johnstone, Mrs. Bruce
 Jones, A. R., Sr.
 Jones, Mrs. C. A.
 Jones, Howard B.
 Jones, Leslie N.
 Jones, Lester M.
 Jones, Owen Barton
 Jones, Miss Susan E.
 Jordan, J. S.
 Jourdan, Al
 Joy, James A.
 Judd, Mrs. Robert
 Augustine
 Judson, Clay
 Junker, Richard A.

 Kaempfer, F. W., Jr.
 Kaempfer, Fred
 Kann, Max M.
 Kannally, Michael V.
 Kanter, Dr. Aaron E.
 Karger, Mrs. Samuel I.
 Karpen, Solomon
 Kates, A. T.
 Katz, Solomon
 Kaufmann, Dr. Gustav L.
 Kaumeyer, Mrs. E. A.
 Keene, William J.
 Keig, Marshall E.
 Kellogg, James G.
 Kellogg, John Payne
 Kelly, Frank S.

 Kelly, Mrs. Haven Core
 Kelly, Joseph J.
 Kelly, William P.
 Kendall, H. R.
 Kenly, Mrs. William K.
 Kennedy, David E.
 Kennedy, Mrs.
 Edward A.
 Kennedy, Lesley
 Keplinger, W. A.
 Kerr, Mrs. Alexander M.
 Kerwin, Edward M.
 Kestnbaum, Meyer
 Keyser, Charles F.
 Kimball, William W.
 King, Mrs. Calvin P.
 King, David E.
 King, Mrs. Nelora S.
 King, Mrs. W. H.
 Kirkpatrick, Donald
 Klee, Mrs. Nathan
 Klein, Mrs. A. S.
 Klein, Dr. David
 Klein, Fred W.
 Kleinschmidt, Edward
 Klotz, Edward C.
 Knapp, Charles S.
 Knobbe, John W.
 Knoke, Mrs. Clara P.
 Knott, Mrs. Stephen R.
 Kobin, Mrs. William C.
 Koepke, Frank J.
 Kohl, Clarence E.
 Kohn, Mrs. Caroline H.
 Kohn, Mrs. Frances J.
 Kohout, Joseph, Jr.
 Kolstad, Odin T.
 Kort, George
 Kraft, John H.
 Krebs, Charles E.
 Kreusser, Mrs. O. T.
 Krier, Ambrose J.
 Kuehn, Miss Katherine
 Kuehn, Oswald L.
 Kunstadter, Sigmund
 Kuppenheimer, Mrs.
 Jonas

 Ladd, George D.
 Laemmle, Mrs. Louis
 Lafean, W. L.
 Laffin, Charles W.
 Laird, Robert S.
 Lake, Mrs. R. C.
 Landes, Mrs. Herbert
 Ross
 Langdon, Buel A.
 Lange, A. G.
 Langford, Joseph P.
 Langrill, W. E.
 Lanman, E. B.
 Lantry, Thomas B.

- Laramore, Florian Eugene
 Larson, Simon P.
 Lasch, Charles F.
 Lau, Mrs. John Arnold
 Lavidge, Arthur W.
 Law, M. A.
 Law, Mrs. Robert O.
 Lawson, Miss Mary J.
 Lawton, Samuel T.
 Lazelle, L. L.
 Leach, Porter F.
 Lebold, Samuel N.
 Lechler, E. Fred
 Lee, Edward T.
 Lee, Mrs. W. George
 Leigh, Maurice
 Leitzell, Mrs. Samuel N.
 Leland, Mrs. Roscoe G.
 Leonard, George Edward
 Leonard, Dr. Joseph M.
 Leslie, John Woodworth
 Lettermann, A. L.
 Levin, Louis
 Levis, John M.
 Levy, Mrs. Arthur K.
 LeWald, W. B.
 Lewis, Mrs. Harry G.
 Lewis, Mrs. Walker O.
 L'Hommedieu, Arthur
 Lichtenstein, Walter
 Lieboner, William S.
 Lindley, Mrs. Fred W.
 Lindsay, Mrs. Martin
 Linn, Mrs. James W.
 Lipman, Abraham
 List, Paulus
 Lobdell, Harry H.
 Loeb, Arthur A.
 Loehr, Karl C.
 Loewenherz, Emanuel
 Logan, Frank G.
 Loring, Edward D.
 Louis, Mrs. John J.
 Ludlam, Miss Bertha S.
 Luther, Miss Edith
 Lutz, J. George
 Lydston, Mrs. G. Frank
- MacArthur, Fred V.
 Macdonald, Mrs. Marion
 Macfarland, Mrs.
 Henry J.
 Macfarland, Lanning
 Macfarlane, Wilbert E.
 MacFerran, Charles S.
 Mackenzie, Mrs. G. S.
 Mackworth, Mrs.
 Isabel
 Maclean, J. A.
 MacNeille, Mrs. C. T.
 Macomb, J. DeNavarre
 Malkov, David S.
- Mandelbaum, Mrs.
 Maurice H.
 Manheimer, Arthur E.
 Manierre, John T.
 Mann, Howard
 Mansfield, Alfred W.
 Marks, Frank H.
 Marnane, James D.
 Marsh, John McWilliams
 Marston, Mrs. T. B.
 Martin, Edward
 Martin, Mellen C.
 Martin, Ralph H.
 Massmann, Frederick H.
 Mathews, Mrs. Grace
 Mathews, Mrs. Shailer
 Matthews, Francis E.
 May, Mrs. George T., Jr.
 May, Sol
 Mayer, Edwin W. C.
 Mayer, Herman J., Jr.
 Mayer, Oscar G.
 McAllister, M. Hall
 McClelland, Mrs. E. B.
 McConnell, Mrs. H. A.
 McCormick, Alister H.
 McCormick, Miss
 Elizabeth D.
 McCoy, Charles S.
 McCreight, R. B.
 McCulloch, Frank H.
 McDonald, Lewis
 McDougall, Mrs.
 Edward G.
 McFadden, Everett R.
 McGrath, George E.
 McGregor, James P.
 McGuinn, Edward B.
 McGuire, Simms D.
 McHenry, Roland
 McIlvaine, Mrs. John H.
 McIntosh, Neil
 McKay, Charles R.
 McKay, Miss Mabel
 McKibbin, Mrs. George B.
 McKiernan, Mrs.
 Donald D.
 McKinstry, W. B.
 McLaughlin, Dr. James H.
 McMurray, Mrs. George
 Norton
 McNair, Frank
 McNamara, Robert C.
 McNamee, Peter F.
 McPherson, Donald F.
 McSurely, Mrs.
 William H.
 Mead, H. B.
 Mears, Grant S.
 Mechem, J. C.
 Meek, Miss Margaret E.
 Meeker, Arthur
- Mehlhope, Clarence E.
 Meigs, James B.
 Melville, Hugh M.
 Michaels, Joseph
 Milchrist, Frank T.
 Millard, Mrs. E. L.
 Miller, Charles J.
 Miller, Henry G.
 Millsaps, J. H.
 Mitchell, Mrs. George R.
 Moldenhauer, Dr.
 William J.
 Moment, Asher
 Montgomery, John R.
 Moore, Mrs. Agnes C.
 Moore, Dr. Beveridge H.
 Moore, Frederick W.
 Moore, Nathan G.
 Moore, Oscar L.
 Moroney, John J.
 Morris, Ira Nelson
 Morris, Thomas J.
 Morrison, Mrs. C. R.
 Morton, Dr. Edward C.
 Moser, Paul
 Mower, Mrs. Roswell C.
 Mowry, Robert D.
 Mueller, Dr. E. W.
 Mueller, Miss Hedwig H.
 Mulford, Frank B.
 Mundie, Mrs. W. B.
 Murfey, E. T. R.
 Murphy, Henry C.
 Murphy, J. P.
 Myrland, A. L.
- Nance, Willis D.
 Nath, Bernard
 Nau, Otto F.
 Neely, Mrs. Lloyd F.
 Neeves, Leland K.
 Nelson, Arthur W.
 Nelson, Byron
 Nelson, Charles M.
 Nelson, Mrs. Joseph K.
 Nelson, Miss Minnie
 Nelson, Dr. Ole C.
 Nergard, Edwin J.
 Nessler, Robert W.
 Neumann, Arthur E.
 Nevins, John C.
 Nevotti, Joseph J.
 Newberry, Miss Mary L.
 Newcomet, Horace E.
 Newman, Mrs. H. H.
 Newman, Mrs. Jacob
 Niblack, Mrs. William C.
 Nichols, Mrs. Leslie H.
 Nicholson, Mrs. Frank G.
 Nicholson, W. S.
 Nickelson, S. T.
 Nickerson, J. F.

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Nieland, Mrs. Mollie
Bahr
Nixon, Mrs. George F.
Noble, C. W.
Norman, Dan
Norris, Eben H.
Norris, James Dougan
North, Mrs. F. S.
Norton, Ellery
Notheis, Mrs. J. F.
Noyes, Ernest H.
Noyes, Mrs. John High
Nugent, Dr. O. B.
Nutting, C. G.

O'Brien, M. J.
O'Brien, Mrs. Philip
Raymond
Ochsner, Dr. Edward H.
Oldberg, Dr. Eric
Oleson, Dr. Richard
Bartlett
Olin, Edward L.
Olin, Dr. Harry D.
Oliver, G. F.
Olmstead, Ralph W.
Olmsted, Conway H.
Olson, Hon. Harry
Ormsby, Mrs. Frank E.
Osborn, Mrs. Gertrude L.
Ossendorff, Dr. K. W.
Ostrander, R. M.
Outcault, Mrs. Richard
F., Jr.
Owen, C. N.

Palmer, Robert F.
Pardee, Mrs. Lucius C.
Parker, George S.
Parmelee, Dwight S.
Parsons, Bruce
Patch, Mrs. G. M.
Patterson, Mrs. Harry C.
Patterson, Mrs. L. B.
Patterson, Mrs. Wallace
Pauley, Clarence O.
Paver, Paul W.
Payne, Mrs. T. D.
Peacock, Charles D.
Pearl, Allen S.
Pearson, F. J.
Pencik, Miles F.
Pentecost, Lewis J.
Pepple, Mrs. Eloise D.
Perryman, Mrs. Hattie S.
Person, Peter P.
Peruchietti, Miss Anna
Peters, Miss Bernice E.
Peterson, Dr. A. B.
Petrie, Dr. Scott Turner
Pettersen, Fred A.
Pfeiffer, Mrs. Jacob

Pflager, Charles W.
Phelps, Erastus R.
Phillips, Howard C.
Pickell, J. Ralph
Pietsch, Walter G.
Pigall, Mrs. Joseph S.
Pillsbury, Millard B.
Place, F. E.
Plamondon, Alfred D.
Plath, Karl
Platner, John K.
Plattensburg, S. R.
Plummer, Daniel C., Jr.
Pond, Miss Gayle
Pontarelli, Mrs. Michael
Pontius, Dr. John R.
Pottenger, Miss Zipporah
Herrick
Potts, Mrs. W. G.
Price, William D.
Prindle, James H.
Pringle, Mrs. James E.
Pritchard, N. H.
Pritchard, Mrs.
Richard E.
Prosser, H. G.
Proxmire, Dr. Theodore
Stanley
Prussing, Mrs. R. E.
Pulver, Henri Pierre
Purrucker, Miss
Louise M.
Putnam, Rufus W.
Puttkammer, Mrs. Ernst
Pyterek, Rev. Peter H.

Quarles, Albert M.
Quarrie, William F.
Quetsch, L. J.
Quinlan, James T.
Quisenberry, T. E.

Rader, Bud H.
Raithel, Miss Luella
Ramis, Leon Lipman
Randall, C. M.
Randick, Miss Sara A.
Rankin, A. J.
Ranney, Mrs. George A.
Raulf, Mrs. Carl A.
Rawlings, Mrs. I. D.
Ray, Harry K.
Raymond, Mrs. Clifford S.
Rayner, Mrs. Arno P.
Rayner, Frank
Rayner, Lawrence
Read, Mrs. J. J.
Redfield, C. E.
Redman, Sterling L.
Reed, Mrs. Frank C.
Reed, Mrs. Frank D.
Reed, Rufus M.

Reed, T. J.
Reed, Walter S.
Reffelt, Miss F. A.
Regensburg, James
Regenstein, Joseph
Reichmann, Albert F.
Rein, Lester E.
Reiss, William
Requa, Mrs. Charles H.
Reuss, Mrs. Henry H.
Reynolds, Mrs. G.

William
Rice, Mrs. Charles R.
Rice, Granville
Rice, Joseph J.
Rich, Harry
Rich, Kenneth F.
Richards, James Donald
Richter, Arthur
Rick, Miss Florence
Rickard, Mrs. Fay E.
Riel, George A.
Righeimer, Miss Lucy F.
Riley, Mrs. Harry A.
Ritchie, Mrs. John
Roadifer, W. H.
Robbins, Laurence B.
Roberts, Francis R.
Robinson, Miss Nellie
Robson, Mrs. Oscar
Roeca, Mrs. Pina
Rockhold, Mrs.

Charles W.
Rockwell, Lester
Rockwell, Theodore G.
Roden, Carl B.
Roe, Miss Carol F.
Rohnick, Dr. Harry C.
Roodhouse, Benjamin T.
Rooks, Irvin
Rosenberg, Mrs.
Bernhard
Rosenfeld, M. J.
Rosenfels, Irwin S.
Rosenfield, Morris S.
Roth, Allen Benjamin
Roth, Arthur J.
Roth, Lester
Rowell, Dr. L. W.
Rowley, Clifford A.
Roy, Mrs. Ervin L.
Rubovits, Theodore
Ruettinger, Mrs. J. C.
Ryder, Ross D.

Saggars, Wayne
Sample, John Glen
Sanborn, Mrs. V. C.
Saplitzky, Miss Bessie M.
Saueremann, Otto
Sawyer, Dr. C. F.
Sayers, Mrs. A. J.

- Sayre, Dr. Loren D.
 Sayre, Louis T.
 Scallan, John William
 Schaar, Bernard E.
 Schafer, O. J.
 Schaffner, Arthur B.
 Schaus, Carl J.
 Scheel, Fred H.
 Scherer, Andrew
 Schermerhorn, Richard A.
 Schiff, Sydney K.
 Schmidt, Dr. Otto L.
 Schmidt, Theodore
 Schmitt, Mrs. George J.
 Schnadig, E. M.
 Schneider, Dr. C. O.
 Schoeneck, Edward F.
 Schrader, Miss
 Harriet N.
 Schramm, Charles F.
 Schultz, Walter H.
 Schulze, John E.
 Schulze, Paul
 Schupp, Robert W.
 Schwab, Martin C.
 Schwede, Charles W.
 Schweitzer, E. O.
 Schweizer, Carl
 Schymanski, Mrs. Helen
 Scofield, Clarence P.
 Scott, George H.
 Scott, Walter A.
 Scott, Dr. Walter Dill
 Scudder, Mrs.
 Lawrence W.
 Scudder, W. M.
 Seaman, Henry L.
 Sears, Miss Dorothy
 Sears, Kenneth C.
 Seaton, G. Leland
 Selig, Lester N.
 Sellers, Mrs. O. R.
 Selz, Emanuel
 Seneear, Dr. F. E.
 Senior, Mrs. John L.
 Senne, Walter C.
 Seubold, Dr. F. H.
 Sexton, Mrs. Thomas G.
 Shaffer, Mrs. Norman P.
 Shanahan, David E.
 Shanner, Robert B.
 Shapiro, J. F.
 Shaw, Mrs. A. W.
 Shaw, Mrs. J. G.
 Shaw, Mrs. Walter A.
 Shay, John B.
 Sheahan, Miss Marie
 Shell, Mrs. James B.
 Shepard, Guy C.
 Sheridan, L. J.
 Sherman, Edwin
 Sherman, H. C.
 Sherman, Louis A.
 Sherman, Mrs. W. W.
 Shippey, Mrs. Charles W.
 Shiverick, Mrs. A. F.
 Shoemaker, W. H.
 Short, J. R.
 Shortall, John L.
 Sidley, William P.
 Sieck, Herbert
 Sievers, William H.
 Silber, Clarence J.
 Sillani, Mrs. Mabel W.
 Simmons, Mrs. Charles R.
 Simpson, Mrs. Anita
 Simpson, C. G.
 Simpson, Walter H.
 Singer, Albert B.
 Sjostrom, Otto A.
 Skog, Mrs. Ludvig
 Slade, John C.
 Slaney, J. C.
 Sleight, Miss Barbara H.
 Smith, Charles Herbert
 Smith, Mrs. E. A.
 Smith, Glen E.
 Smith, Henry Justin
 Smith, Hermon Dunlap
 Smith, J. Parker
 Smith, O. Jay
 Smith, Reynold S.
 Smithwick, J. G.
 Snite, Fred B.
 Solomon, Harry W.
 Somerville, Mrs. Helen
 Sparrow, Mrs. W. W. K.
 Speed, Dr. Kellogg
 Speer, Earl D.
 Speyer, Mrs. George W.
 Spooner, Charles W.
 Sprague, Albert A., Jr.
 Spring, Benjamin J.
 Spry, George
 Stanbury, Dr. C. E.
 Stangle, Mrs. Mary W.
 Stanley, Mrs. Helen
 Miller
 Staples, Miss Emily
 Stark, Rev. Dudley S.
 Steele, Leo M.
 Steele, Sidney J.
 Steffensen, Sigurd
 Stein, Lawrence M.
 Steinson, Henry G.
 Stensgaard, William L.
 Stephenson, Mrs.
 Elmer E.
 Stern, Mrs. Alfred
 Stern, Jacob S.
 Stevens, Miss
 Charlotte M.
 Stewart, Mrs. George
 Craig
 Stewart, George R.
 Stewart, William
 Stifer, Mrs. J. M.
 Stilwell, Mrs. Abner J.
 Stilwell, George L.
 Stokes, Miss Marguerite
 Storkan, Mrs. James
 Strain, Miss H. Gertrude
 Strand, Mrs. Martin
 Stransky, Hon.
 Franklin J.
 Straub, Mrs. Walter F.
 Straus, Arthur W.
 Straus, Eli M.
 Street, C. R.
 Strigl, F. C.
 Strom, Walter H.
 Stumes, Charles B.
 Sturla, Harry L.
 Sturtevant, Roy E.
 Sudler, Carroll H., Jr.
 Sullivan, Grey
 Summers, L. F.
 Sundblom, Mrs. Haddon
 Hubbard
 Sundell, Ernest W.
 Sundlof, F. W.
 Sutcliffe, Miss Sarah E.
 Swanson, Frank E.
 Swift, T. Philip
 Sylvester, Miss Ada I.
 Symmes, William H.
 Tankersley, J. N.
 Tark, Mrs. L. S.
 Taylor, Edmund H.
 Taylor, Frank F.
 Taylor, L. S.
 Teckemeyer, A. O.
 Telfer, Thomas A.
 Tempe, Leupold
 Tevander, Mrs. Olaf N.
 Thomas, Charles F.
 Thomas, John J.
 Thomason, Samuel E.
 Thompson, Mrs. Slason
 Thompson, Mrs. W. B.
 Thorsness, Lionel G.
 Throop, George Enos
 Tibbetta, Mrs. N. L.
 Tift, Mrs. Henry
 Timberlake, Mrs.
 Thomas M.
 Tinling, C. F. M.
 Tippet, William M.
 Todd, A.
 Tonk, Percy A.
 Towner, Miss
 Elizabeth W.
 Towner, Frank H.
 Tracy, Howard Van S.
 Trainer, William O.

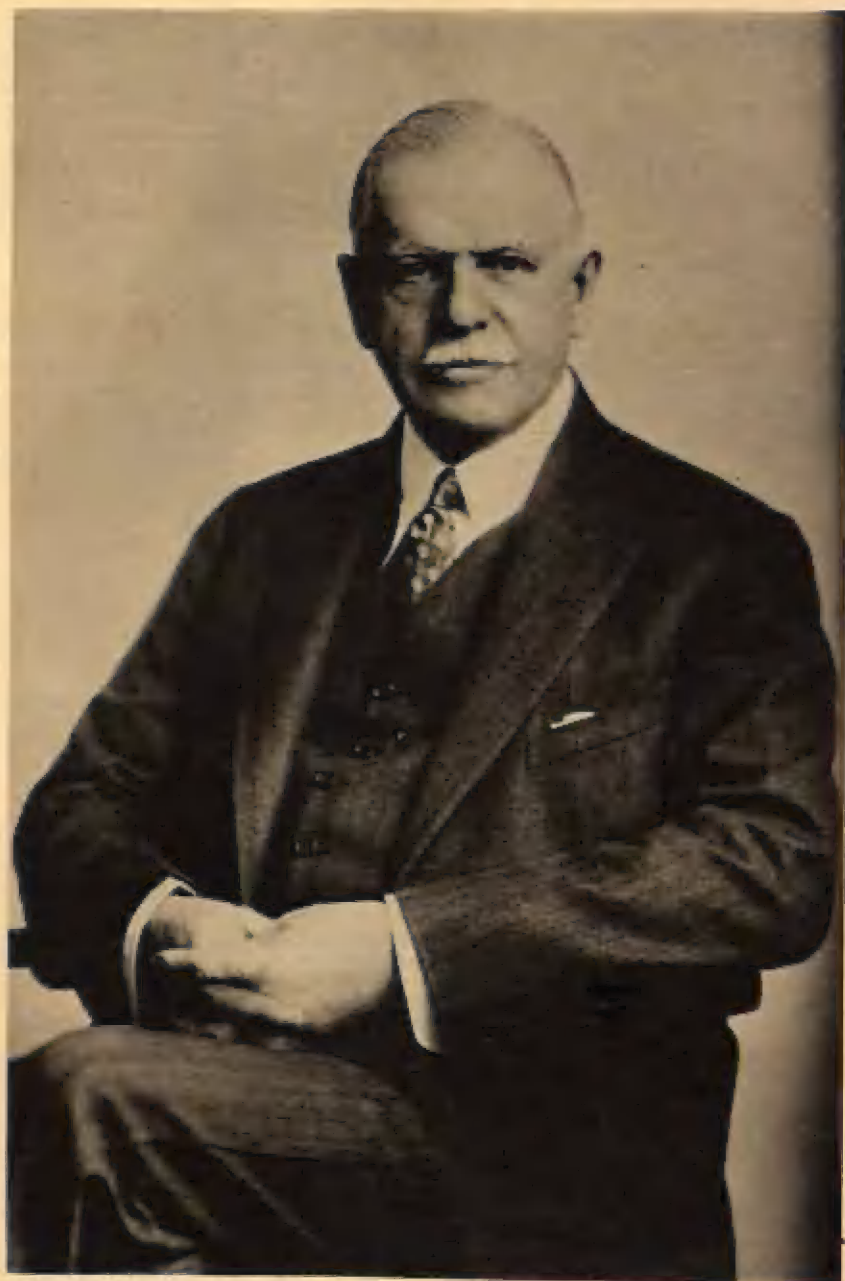
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- | | | |
|-------------------------|--------------------------|------------------------|
| Trausch, Joseph H. | Webster, James | Williamson, John A. |
| Traver, George W. | Webster, N. C. | Wilson, Arlen J. |
| Tremain, Miss Eloise R. | Wegg, Donald R. | Wilson, E. L. |
| Triggs, Charles W. | Weil, Mrs. Leon | Wilson, Percival C. |
| Trude, Mrs. A. S. | Weil, Mrs. Victor | Wilson, Mrs. Percy |
| Truman, Percival H. | Weiner, Charles | Wilson, William |
| Trumbull, Miss Florence | Weinress, Morton | Wilson, William G. |
| Tyler, Alfred C. | Weiss, Theodore O. | Wilson, William R. |
| | Weissbrenner, Dr. R. F. | Winston, Mrs. Farwell |
| Ullmann, Mrs. Albert I. | Welch, L. C. | Winterbotham, Mrs. |
| Utley, George B. | Welles, Mrs. Donald P. | John R., Jr. |
| | Welles, Mrs. Edward | Wise, Mrs. Harold |
| Vail, Mrs. Edward G. | Kenneth | Witkowski, James |
| Vaill, Mrs. J. H. | Wells, Mrs. H. Gideon | Witkowski, Leon |
| VanDeventer, W. E. | Wentworth, John | Wolbach, Murray |
| VanHagen, Mrs. George | Wescott, Dr. Virgil | Wolcott, Carl F. |
| E. | West, Mrs. Frederick T. | Wolfe, William C. |
| Varde, C. M. | West, Thomas H. | Wolterding, Gerhard C. |
| Varty, Leo G. | Wetter, Miss A. | Wood, Milton G. |
| Vaughan, Mrs. | Albertine | Woodcock, Mrs. L. T. |
| Gordon M. | Wheeler, Edgar E. | Woodyatt, Dr. Rollin |
| Vial, F. K. | Wheeler, Leslie M. | Turner |
| Vilas, Mrs. George B. | Wheeler, Seymour | Worthy, Mrs. |
| Vose, Mrs. Frederic P. | Whidden, Ray A. | Sidney W. |
| | Whipple, Mrs. George A. | Wright, H. C. |
| Wagner, Richard | Whiston, Frank M. | Wrisley, George A. |
| Waite, Roy E. | White, W. J. | Wulbert, Morris |
| Waldeck, Herman | White, W. T. | Wurzburg, H. J. |
| Walker, James R. | Whitney, Mrs. Charles | |
| Wallach, Mrs. H. L. | Pratt | Yeakel, Dr. William K. |
| Waller, Mrs. Trigg | Whitney, Mrs. Gordon | Yeomans, Charles |
| Walpole, S. J. | Whitwell, J. E. | Yorkey, Mrs. Margaret |
| Walsh, Miss Mary | Wickham, Mrs. | Young, B. Botsford |
| Walton, Lyman A. | Thomas Y. | Young, E. Frank |
| Warner, E. J., Jr. | Wickland, Algot A. | Young, Ferdinand H. |
| Warner, Mason | Wiersen, Miss E. Lillian | Young, Mrs. Henry |
| Warnesson, Miss | Wilder, Emory H. | Young, James W. |
| Victoria | Wilds, John L. | |
| Warren, L. Parsons | Wiley, Edward N. | Zacharias, Robert M. |
| Warren, William G. | Wilhelm, Frank Edward | Zane, John Maxcy |
| Wasson, Theron | Wilken, Mrs. Theodore | Zbyszewski, Tytus |
| Watkins, Frank A. | Wilkey, Fred S. | Zenos, Rev. Andrew C. |
| Watkins, Frederick A. | Willard, Guy | Ziff, Mrs. Belle |
| Watson, Vernon S. | Willens, Joseph R. | Zimmermann, Mrs. P. T. |
| Webber, E. A. | Willett, Howard L. | Zintak, Frank V. |
| | Williams, Lawrence | Zitzewitz, Elmer |

DECEASED, 1934

- | | | |
|----------------------|------------------------|--------------------------|
| Bartlett, Charles C. | Lutzow, Fred H. | Reed, William P. |
| Boyd, Mrs. E. B. | | |
| Bunts, Frederick W. | McArthur, Dr. Lewis L. | Schmidt, Dr. Henry J. G. |
| Burkhardt, C. E. | McShane, James E. | Schwarz, August |
| | Miller, Edward L. | Scully, Miss Florence E. |
| Daiches, Eli | Miller, Richard O. | Smith, Miss Mary Rozet |
| Deane, Ruthven | Morgenthau, Mrs. | Soper, Thomas |
| | Sidney L. | |
| Holman, Alfred L. | | Wales, Henry W. |
| Howe, Irwin M. | Noble, F. H. | Watkins, Jesse M. |





CYRUS H. McCORMICK

A Trustee of the Museum and member of the Building Committee

FIELD MUSEUM OF NATURAL HISTORY

FOUNDED BY MARSHALL FIELD, 1893

PUBLICATION 354

REPORT SERIES

VOL. X, No. 3

ANNUAL REPORT OF THE DIRECTOR

TO THE
BOARD OF TRUSTEES

FOR THE YEAR 1935



CHICAGO, U. S. A.

JANUARY, 1936

BEQUESTS

Bequests to Field Museum of Natural History may be made in securities, money, books or collections. They may, if desired, take the form of a memorial to a person or cause, to be named by the giver. For those desirous of making bequests to the Museum, the following form is suggested:

FORM OF BEQUEST

I do hereby give and bequeath to Field Museum of Natural History of the City of Chicago, State of Illinois, _____

Contributions made within the taxable year to Field Museum of Natural History to an amount not in excess of 15 per cent of the taxpayer's net income are allowable as deductions in computing net income for federal income tax purposes.

Endowments may be made to the Museum with the provision that an annuity be paid to the patron during his or her lifetime. These annuities are guaranteed against fluctuation in amount and may reduce federal income taxes.

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First Vice-President

ALBERT A. SPRAGUE

Second Vice-President

JAMES SIMPSON

Third Vice-President

ALBERT W. HARRIS

Secretary

STEPHEN C. SIMMS

Treasurer and Assistant Secretary

SOLOMON A. SMITH

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JAMES SIMPSON

SOLOMON A. SMITH

ALBERT A. SPRAGUE

SILAS H. STRAWN

LESLIE WHEELER

JOHN P. WILSON

COMMITTEES

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Finance.—Albert W. Harris, Solomon A. Smith, James Simpson, Frederick H. Rawson,* John P. Wilson.

Building.—William J. Chalmers, Samuel Insull, Jr., Cyrus H. McCormick, Ernest R. Graham, William H. Mitchell.

Auditing.—James Simpson, Fred W. Sargent, George A. Richardson.

Pension.—Albert A. Sprague, Sewell L. Avery, Solomon A. Smith.

*REMOVED, 1935

FORMER MEMBERS OF THE BOARD OF TRUSTEES

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OWEN F. ALDIS*	1893-1898
ALLISON V. ARMOUR	1893-1894
EDWARD E. AYER*	1893-1927
JOHN C. BLACK*	1893-1894
M. C. BULLOCK*	1893-1894
DANIEL H. BURNHAM*	1893-1894
GEORGE R. DAVIS*	1893-1899
JAMES W. ELLSWORTH*	1893-1894
CHARLES B. FARWELL*	1893-1894
FRANK W. GUNSAULUS*	1893-1894, 1918-1921
EMIL G. HIRSCH*	1893-1894
CHARLES L. HUTCHINSON*	1893-1894
JOHN A. ROCHE*	1893-1894
MARTIN A. RYERSON*	1893-1932
EDWIN WALKER*	1893-1910
WATSON F. BLAIR*	1894-1928
HARLOW N. HIGINBOTHAM*	1894-1919
HUNTINGTON W. JACKSON*	1894-1900
ARTHUR B. JONES*	1894-1927
GEORGE MANIERRE*	1894-1924
NORMAN B. REAM*	1894-1910
NORMAN WILLIAMS*	1894-1899
MARSHALL FIELD, JR.*	1899-1905
FREDERICK J. V. SKIFF*	1902-1921
GEORGE F. PORTER*	1907-1916
RICHARD T. CRANE, JR.*	1908-1912, 1921-1931
JOHN BARTON PAYNE*	1910-1911
CHAUNCEY KEEP*	1915-1929
HENRY FIELD*	1916-1917
WILLIAM WRIGLEY, JR.*	1919-1931
HARRY E. BYRAM	1921-1928
D. C. DAVIES*	1922-1928
CHARLES H. MARKHAM*	1924-1930
WILLIAM V. KELLEY*	1929-1932

*DECEASED

FORMER OFFICERS

Presidents

EDWARD E. AYER*	1894-1898
HARLOW N. HIGINBOTHAM*	1898-1908

First Vice-Presidents

MARTIN A. RYERSON*	1894-1932
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Second Vice-Presidents

NORMAN B. REAM*	1894-1902
MARSHALL FIELD, JR.*	1902-1905
STANLEY FIELD	1906-1908
WATSON F. BLAIR*	1909-1928
ALBERT A. SPRAGUE	1929-1932

Third Vice-Presidents

ALBERT A. SPRAGUE	1921-1928
JAMES SIMPSON	1929-1932

Secretaries

RALPH METCALF	1894
GEORGE MANIERRE*	1894-1907
FREDERICK J. V. SKIFF*	1907-1921
D. C. DAVIES*	1921-1928

Treasurers

BYRON L. SMITH*	1894-1914
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Directors

FREDERICK J. V. SKIFF*	1893-1921
D. C. DAVIES*	1921-1928

*DECEASED

LIST OF STAFF

STEPHEN C. SIMMS, *Director*

DEPARTMENT OF ANTHROPOLOGY.—Paul S. Martin, *Acting Curator*; A. L. Kroeber, *Research Associate in American Archaeology*. ASSISTANT CURATORS: Albert B. Lewis, *Melanesian Ethnology*; J. Eric Thompson,* *Central and South American Archaeology*; Wilfrid D. Hambly, *African Ethnology*; Henry Field, *Physical Anthropology*; T. George Allen, *Egyptian Archaeology*.

DEPARTMENT OF BOTANY.—B. E. Dahlgren, *Curator*; Paul C. Standley, *Associate Curator of the Herbarium*; J. Francis Macbride, *Assistant Curator of the Herbarium*; Llewelyn Williams, *Assistant Curator of Economic Botany*; Samuel J. Record, *Research Associate in Wood Technology*; A. C. Noé, *Research Associate in Paleobotany*.

DEPARTMENT OF GEOLOGY.—Henry W. Nichols, *Curator*; Elmer S. Riggs, *Associate Curator of Paleontology*; Sharat K. Roy, *Assistant Curator of Geology*; Bryan Patterson, *Assistant Curator of Fossil Mammals*.

DEPARTMENT OF ZOOLOGY.—Wilfred H. Osgood, *Curator*. MAMMALS: Colin C. Sanborn, *Assistant Curator*; Julius Friesser, C. J. Albrecht, A. G. Rueckert, *Taxidermists*. BIRDS: C. E. Hellmayr, *Associate Curator*; Rudyerd Boulton, *Assistant Curator*; Boardman Conover, Leslie Wheeler, *Associates*; Emmet R. Blake, *Assistant*; R. Magoon Barnes, *Assistant Curator of Birds' Eggs*; Ashley Hine,* John W. Moyer, *Taxidermists*. AMPHIBIANS AND REPTILES: Karl P. Schmidt, *Assistant Curator*; Leon L. Walters, *Taxidermist*. FISHES: Alfred C. Weed, *Assistant Curator*; Leon L. Pray, *Taxidermist*. INSECTS: William J. Gerhard, *Associate Curator*; Emil Liljeblad, *Assistant*. OSTEOLOGY: Edmond N. Gueret, *Assistant Curator*; Dwight Davis, *Assistant*.

N. W. HARRIS PUBLIC SCHOOL EXTENSION.—Stephen C. Simms, *Acting Curator*; A. B. Wolcott, *Assistant Curator*.

JAMES NELSON AND ANNA LOUISE RAYMOND FOUNDATION.—Margaret M. Cornell, *Chief*; Franklin C. Potter,* Miriam Wood, Leota G. Thomas, *Guide-lecturers*.

LIBRARY.—Emily M. Wilcoxon, *Librarian*; Mary W. Baker, *Assistant Librarian*.

ARTIST.—Charles A. Corwin.

ADMINISTRATION.—Clifford C. Gregg, *Assistant to the Director*; Benjamin Bridge, *Auditor*; Henry F. Ditzel, *Registrar*; Elsie H. Thomas, *Recorder*—in charge of publication distribution; H. B. Harte, *Public Relations*; Pearle Bilinske, *Memberships*; J. L. Jones, *Purchasing Agent*.

PRINTING.—Dewey S. Dill, in charge; Lillian A. Ross, *Editor and Proofreader*.

PHOTOGRAPHY AND ILLUSTRATION.—C. H. Carpenter, *Photographer*; Carl F. Gronemann, *Illustrator*; A. A. Miller, *Photogramurist*.

MAINTENANCE.—John E. Glynn, *Superintendent*; W. H. Corning, *Chief Engineer*; W. E. Lake, *Assistant Engineer*.

*RESIGNED, 1935

ANNUAL REPORT OF THE DIRECTOR

1935

To the Trustees of Field Museum of Natural History:

I have the honor to present a report of the operations of the Museum for the year ending December 31, 1935.

That the Museum is continuing to fulfill, on a large scale, its mission of contributing to the education of both adults and children, is indicated by the year's attendance which was well in excess of a million. Although the number of visitors, 1,182,349, was considerably less than that recorded in several previous years, it was rather larger than might have been anticipated. The fact must be taken into consideration that this was the first year following two abnormal years in which the attendance rose to unparalleled heights due largely to the institution's proximity to the grounds of A Century of Progress exposition.

To obtain a true basis of comparison it is necessary to go back a few years, as in the following table showing annual attendance since 1929:

1929	1,168,430
1930	1,332,799
1931	1,515,540
1932	1,824,202
1933	3,269,390
1934	1,991,469
1935	1,182,349

In this table can be traced a steady growth in attendance under normal conditions (that is, without the stimulus of an exposition) through 1931; an acceleration in 1932, caused to some extent by the fact that pre-exposition activities were drawing large crowds to the vicinity of the Museum; the peak (more than double the 1931 attendance) reached in the public enthusiasm at A Century of Progress during its first season, in 1933; a still extra-large attendance in 1934, although decreased from that of the preceding year just as attendance at the exposition itself declined in its second season; and finally a return in 1935 to a figure slightly higher than 1929, which may be regarded as a quite natural balancing reaction after three years in which public interest had been so intensified by extraordinary factors. What seems most worthy of note, therefore, is

not the degree to which attendance was reduced during 1935, but rather that the Museum's appeal was great enough still to attract more than a million visitors after three such unusual years. In passing, it is interesting to remark that the 1935 attendance at the Museum was larger than that reported by any of the other principal Chicago museums and similar institutions.

As usual, in addition to visitors actually coming to the Museum, the institution extended its educational influence in 1935 to hundreds of thousands of others, principally children, through its extra-mural activities conducted by the Department of the N. W. Harris Public School Extension, and the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. Scientific information was disseminated likewise to untold numbers through the institution's publications and leaflets, the bulletin *Field Museum News*, articles in the daily and periodical press, and through various other channels.

Paid admissions to the Museum remained in about the same proportion to total attendance as in the previous year. Visitors paying the 25-cent admission fee numbered only 54,631, or less than 5 per cent. Members of the Museum, children, teachers, students, and others who are admitted free on all days, together with admissions on the free days (Thursdays, Saturdays and Sundays) numbered 1,127,718.

There were no exceptional single day's attendances, as in other years, when more than 50,000, and even more than 65,000 visitors came in a day. During 1935 the highest attendance for a single day was 22,305 on September 1, a Sunday.

The Department of the N. W. Harris Public School Extension continued to provide natural history material for study by approximately 500,000 children in more than 400 schools and other institutions. Its traveling exhibition cases, of which 882 were in circulation during the year, were available to all the children in these schools daily during the school terms. Cases are delivered and collected by Museum trucks, and the schedule is so arranged that two new subjects are brought to each school every two weeks.

The activities of the James Nelson and Anna Louise Raymond Foundation reached 219,321 children during the year, an increase of nearly 6,000 over the preceding year. Of these, 153,557 attended 411 illustrated extension lectures presented in classrooms and assembly halls of their own schools by the staff of the Raymond Foundation. This was a decrease from the 162,360 attending such

lectures in 1934, but was more than made up for by the increases in the participants in Raymond Foundation activities conducted within the Museum. Those attending the twenty motion picture entertainments provided in the James Simpson Theatre in 1935 numbered 34,004, as against 27,653 in 1934; guide-lecture tours of the exhibition halls were provided for 643 groups aggregating 24,978 children during 1935, as against 404 groups aggregating 14,759 in 1934.

The regular spring and autumn courses of free illustrated lectures for adults on science and travel were presented in the James Simpson Theatre on Saturday afternoons during March and April, and October and November. Total attendance at the eighteen lectures presented was 24,336. There were guide-lecture tours provided for 355 groups of adults, and these were taken advantage of by 6,782 persons. Large numbers of persons, especially students, teachers, and visiting scientific workers, made use of the Museum Library of some 100,000 volumes, and also of the scientific study collections provided in each of the Museum's scientific Departments.

In recognition of his many valuable gifts to the Museum, consisting principally of collections of birds and individual specimens of rare birds, Mr. Leslie Wheeler's name was added to the list of the Contributors to the Museum (a membership classification designating those whose gifts in money or materials reach a value between \$1,000 and \$100,000). Mr. Wheeler has been a Trustee of the Museum since 1934.

Three new Life Members were elected during 1935. They are: Mr. Emanuel J. Block, Mr. Albert B. Dick, Jr., and Mrs. Philip S. Rinaldo.

Two new Non-Resident Life Members were elected: Mr. John Wyatt Gregg, of Monticello, Illinois; and Mr. Herbert F. Johnson, Jr., of Racine, Wisconsin.

A list of Members in all classes will be found at the end of this Report (p. 389). The total membership for the year was 4,143, which, while representing a gain of only one Member as compared with 1934 when there were 4,142, was nevertheless encouraging, as it made 1935 the first year since 1930 in which no loss was sustained, the intervening years having been marked with losses ranging from 57 to as many as 819.

The death of Professor James Henry Breasted, founder and Director of the Oriental Institute of the University of Chicago, in December, 1935, is noted with regret. That learned scholar, whose

outstanding accomplishments in archaeology had made him world-famous, in earlier years was of great service to Field Museum. He handled the purchasing and accomplished the original cataloguing and labeling of a large part of the Egyptian collection now in this institution. On May 17, 1926, he was elected an Honorary Member of Field Museum for his eminent service to Science.

Tribute is due also to Dr. Henry Fairfield Osborn, Honorary President of The American Museum of Natural History, New York, who died in November. While Dr. Osborn had no direct connection with Field Museum, the influence of his great work was felt here as at other institutions devoted to science, and largely as a result of his efforts the utmost friendliness, harmony and active cooperation has prevailed between The American Museum and Field Museum.

Sorrow was felt at Field Museum, too, because of the death, in February, of Dr. Herbert Weld, noted British scholar in the history and literature of Assyria and Ethiopia. He was sponsor, on behalf of Oxford, of the Field Museum-Oxford University Joint Expedition to Mesopotamia. On the basis of observations he made during his extensive travels, the site of Kish was selected for the excavations conducted over a long period of years by this expedition.

At the Annual Meeting of the Board of Trustees, held January 21, 1935, all Officers of the Museum who had served in 1934 were re-elected.

At the regular meeting held on October 21, the Board regretfully accepted the resignation of Trustee Frederick H. Rawson. Mr. Rawson was compelled to sever this connection because of ill health and the necessity of spending a large part of his time away from Chicago. He had been a Trustee since August, 1927, and his able counsel was greatly appreciated by his fellows on the Board, where he rendered distinguished service on the important Finance Committee. Due to his eminent services to Science and to the Museum he is an Honorary Member, a Patron, a Contributor, a Corporate Member, and a Life Member of the Museum. Most notable among his many benefactions for the Museum were the organizing and financing of the two Rawson-MacMillan Subarctic Expeditions of Field Museum in 1926 and 1927-28; his similar sponsorship of the Frederick H. Rawson-Field Museum Ethnological Expedition to West Africa in 1929, and his contribution of \$18,000 toward the preparation of the groups restoring types of prehistoric men in the Hall of the Stone Age of the Old World (Hall C). Altogether his

contributions total more than \$93,000. His fellow Trustees join in wishing him health and happiness in his retirement.

No steps were taken in 1935 toward the election of a successor to Mr. Rawson.

A number of important new exhibits were installed during 1935, principally in the Department of Zoology. Seven new habitat groups of mammals were completed, of which five are in William V. Kelley Hall (Hall 17) devoted to Asiatic species, one in Carl E. Akeley Memorial Hall (Hall 22) of African mammals, and one in the Hall of Marine Mammals (Hall N). First of the Kelley Hall groups was that of axis deer, or chital, of India, a spotted species considered by many the most beautiful member of the deer family. The group is composed of specimens obtained from two sources, some having been collected by Colonel Theodore Roosevelt and Mr. Kermit Roosevelt on the James Simpson-Roosevelts Asiatic Expedition (1926), and some by the late Colonel J. C. Faunthorpe of Bombay. Staff Taxidermist C. J. Albrecht prepared the group, and the background was painted by Staff Artist Charles A. Corwin. Strikingly dramatic is the next exhibit finished in this hall, that of the common leopard, in which a fine specimen of this animal is seen crouched in a tree ready to pounce upon its prey. The specimen was obtained on the James Simpson-Roosevelts Expedition. Taxidermy, painted background, and reproduction of the wild fig tree, which entailed an enormous amount of detailed labor, all are the work of Staff Taxidermist Leon L. Pray, assisted by Mr. Frank Lettl. Important data for the task were supplied by the Bombay Natural History Society.

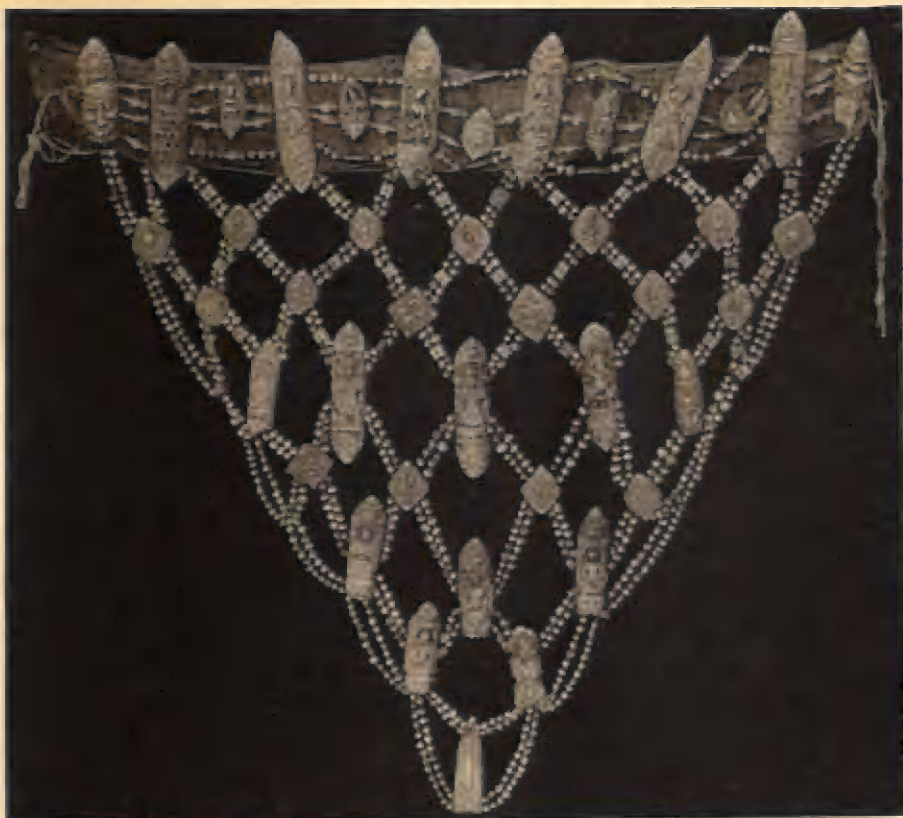
Two groups of antelopes native to India were installed in Kelley Hall. In one, two small species are shown, the Indian antelope or blackbuck, and the Indian gazelle or chinkara. The specimens came from the Simpson-Roosevelts Asiatic Expedition and from Colonel Faunthorpe. Valuable studies for preparation of the group were made through the cooperation of the Bombay Natural History Society; the animals were mounted by Staff Taxidermist Arthur G. Rueckert, assisted by Mr. William E. Eigsti, and Artist Corwin painted the background. The other antelope group is that of the nilgai or blue bull. This is the largest species native to India. The specimens were collected by the Simpson-Roosevelts Expedition. Staff Taxidermist Julius Friesser prepared the group, assisted by Mr. Lettl, who reproduced a dhak tree which is a prominent feature of the group. Mr. Corwin painted the background.

Fifth of the Kelley Hall groups is that of the rare Himalayan snow leopard of Tibet and India. This animal is regarded as the most beautiful member of the cat family, and because of its rarity and the high altitudes it inhabits, it is the least known of the cats. These animals make one of the most striking groups in the Museum, not only because of the interest and beauty of the animals themselves, but because of the impressive mountain-top scene in which they are displayed. The specimens were collected by natives, and obtained by the Museum through traders in India. Taxidermy is by Mr. Albrecht, and the background by Mr. Corwin.

The addition to Akeley Hall is a group of the bizarre-looking gelada baboons found only in Ethiopia. The animals are shown on a pile of rocks typical of the mountain crests and high-walled canyons they inhabit. The specimens were collected by the Field Museum—*Chicago Daily News* Abyssinian Expedition (1926-27). Preparation of the group was the work of Taxidermist Pray.

In the Hall of Marine Mammals there was installed a group, one of the largest in the Museum, of elephant seals from Guadalupe Island off the west coast of Mexico. These huge creatures, which exceed any other seals in size, are comparatively rare, difficult to obtain, and difficult to preserve and prepare for exhibition. Specimens were secured for the Museum as a result of the generous cooperation of Captain G. Allan Hancock, of Los Angeles, and the interest of Dr. Harry M. Wegeforth, President of the San Diego Zoological Society. They organized the Hancock-Wegeforth Expedition for the Museum in 1933, and with two Field Museum men aboard (Taxidermist Friesser and his assistant, Mr. Frank Wonder) made a special cruise to Guadalupe on Captain Hancock's large motor ship, the *Velero III*, an especially equipped vessel frequently used for scientific work. Part of the expense of the expedition was met with income from the Emily Crane Chadbourne Fund of the Museum. The group, in which the animals are shown basking on a seashore with the surf rolling in, includes one enormous bull, seventeen feet in length, which weighed about 5,000 pounds in life, and several other specimens. The collectors, Messrs. Friesser and Wonder, were responsible also for taxidermy on the group. Artist Corwin painted the background which shows a section of the beach on Guadalupe where the elephant seals assemble in large numbers. Such gathering-places are referred to as hauling grounds.

Extensive alterations were made on the habitat group in Hall 20 illustrating the bird life of Walrus Island in the Bering Sea. The



SACRED APRON

Hall 32

Consisting of forty-one carved pieces of human thigh bones. Used in religious ceremonies of the Tibetan Lamas

About one-seventh actual size

Presented by Arthur B. Jones

group, a gift to the Museum from President Stanley Field, was completely reinstalled with great improvements, the work being done by Messrs. Pray, Letl, and Corwin.

Exhibits of North American birds in Hall 21 were completed by Staff Taxidermists Ashley Hine and John W. Moyer, and important additions were made also to the exhibits of foreign birds occupying the other half of this hall. Of special interest are a screen showing the principal extinct species of North American birds, which points a lesson on the need for conservation measures, and an exhibit of foreign birds introduced on this continent by importation through the agency of man and now so adapted as to be on a par with natives. A number of rare, and many otherwise interesting birds, are included on screens of ocean birds and of pheasants and their relatives which have been added to this same hall. A specimen of the large flightless bird of New Guinea known as the cassowary, added to Hall 21, represents a new development in ornithological taxidermy. The head, neck, legs and feet of this specimen, instead of being mounted in the usual manner, were reproduced in cellulose-acetate by Staff Taxidermist Leon L. Walters, using the same method he has so successfully developed and used for the preparation of reptiles, amphibians, and large hairless or thinly haired animals such as the rhinoceros and hippopotamus. This new application proved highly successful, and solved the problem presented by the fact that original dried skins in the Museum collection have lost all their brilliant coloration, and the horny layers of the casque have split so as to lose their natural translucence.

A number of additions and reinstallations were effected also among the exhibits of reptiles, fishes, and skeletons.

In the Department of Geology two new paleontological exhibits of outstanding scientific interest were added to Ernest R. Graham Hall (Hall 38), and a third was practically completed, ready for installation early in 1936. One of these is known as *Astrapotherium magnum*. This is a species of animal which lived in southern Argentina and neighboring countries during the Miocene age (approximately 15,000,000 years ago). It possesses many unusual features of structure, and the Museum specimen has been the object of studies not only by the Staff but by eminent paleontologists from other institutions who came here especially for the purpose.

The second great fossil among the additions to Graham Hall is that of the largest species of South American ground sloth, known as *Megatherium americanum*. This giant, eighteen feet long,

was collected by Associate Curator Elmer S. Riggs while leading the Second Marshall Field Paleontological Expedition to Argentina (1927), and is believed to be the only complete skeleton in any North American museum. The task of assembling it was an enormous one that occupied for many months the time of Preparator Phil C. Orr. The animal lived about 20,000 years ago.

A mounted skeleton of an extremely rare and surpassingly interesting fossil mammal of North America, called *Titanoides faberi*, was practically completed in 1935, and awaited installation in January, 1936. This animal until very recently was one of the least known of American fossil mammals, and until specimens were collected in 1932 and 1933 by Assistant Curator Bryan Patterson (assisted by Mr. Edwin B. Faber of Grand Junction, Colorado, the discoverer, and Mr. T. J. Newhill, Jr., Preparator James H. Quinn, and Mr. C. A. Quinn) the animal was known only by a specimen of its lower jaws. *Titanoides*, which has no near relatives now living and is so unlike any existing mammal that profitable comparisons are impossible, is believed to have been the first of the large mammals to appear on this continent following the decline of the dinosaurs and other once dominant reptilian groups. It lived during the Paleocene or opening period of the Age of Mammals, some 50,000,000 years ago.

Also of interest among additions to Graham Hall are the shell and internal skeleton of a great fossil land-turtle, forty-two inches long and thirty-two inches wide, collected in 1931 by a Museum expedition in western Nebraska. In other divisions of the Department of Geology minor additions were made to the exhibits, as well as a number of reinstallations to improve older exhibits.

Scattered additions were made to the exhibits in the Department of Anthropology. In Hall 8, devoted to the archaeology and ethnology of Mexico and Central America, there was placed a miniature model of the ancient votive Pyramid of Quetzalcoatl. This was obtained in an exchange with the National Museum of Mexico. It is a strikingly accurate reproduction, and makes a most attractive exhibit. Hall 9, devoted to the archaeology of South America, has been completely reinstalled and much new material added. Among features of special interest are an exhibit of so-called "mummies" or desiccated bodies from ancient Peru, reproductions of two opened Peruvian graves, dating to the period about A.D. 1250, shrunken human heads of enemies decapitated by the Chaco and Jivaro Indians and preserved by a unique method, exhibits showing the

preparation of food from the poisonous mandioca tuber, and the sacred trumpets used in initiation rites. In the same hall was placed an ancient Peruvian *quipu*, an accounting device used by the Incas in various kinds of computation. This rare object was found in a collection of archaeological material presented some years ago by Messrs. Stanley Field, Henry J. Patten, and Charles B. Pike.

A collection of primitive African musical instruments and dancing regalia, obtained in Nigeria by the Frederick H. Rawson-Field Museum Ethnological Expedition to West Africa (1929) was added to Hall D. The Races of Mankind exhibits in Chauncey Keep Memorial Hall (Hall 3) were completed with the addition of the bronze bust of a Beduin, bringing the total number of sculptures by Miss Malvina Hoffman to ninety-one (including several groups which increase the number of individual representatives of the various races portrayed to 101).

Reinstallation of exhibits in Hall 32 (ethnology of China and Tibet), which had been interrupted by the death late in 1934 of former Curator Berthold Laufer, was completed by Assistant Curator J. Eric Thompson. New exhibits of special interest are a notable T'ang period clay statuette of a dancing woman presented to the Museum by an anonymous donor as a memorial to Dr. Laufer; a Tibetan coracle, or semi-globular boat made of animal skins, of a type used in crossing rivers, which once served Dr. Laufer while on an expedition in Tibet; and a colorful statue of Yama, the Tibetan god of death, presented by Mr. William E. Hague. A large cast-iron bell from a Lama temple in Tibet, which had been withdrawn from exhibition for some years, was reinstalled in this hall.

The principal undertakings for augmenting and improving the exhibits of the Department of Botany are a series of fifteen large mural paintings showing plants in their natural environments, for the walls of the Hall of Plant Life (Hall 29), and the construction of dioramas of coffee and tea plantations. Two of the murals, which are being done by Staff Artist Charles A. Corwin, were completed and installed in 1935—one representing the baobab tree of Africa, and the other showing some giant cacti of Mexico. Several others were brought near enough to completion to be placed on view early in 1936. The coffee plantation model, the work of Preparator John R. Millar, with a background by Mr. Corwin, was completed and installed in Hall 25 with other exhibits pertaining to the coffee industry; and the tea plantation diorama is well on the way toward completion.

Other additions to the Hall of Plant Life include reproductions of acanthus, mistletoe and loquat plants.

For reasons of economy, the Museum conducted no expeditions during 1935. The institution benefited to some extent, however, from expeditionary work under other auspices. Through the Emily Crane Chadbourne Fund the Museum was enabled to participate in the Second Byrd Antarctic Expedition headed by Admiral Richard E. Byrd. As a result, specimens were obtained of the two principal species of Antarctic seals. These are of the species known as Weddell's seal and crab-eating seal, and are quite rare in museum collections. It is planned to use the specimens of Weddell's seal in a proposed habitat group for the Hall of Marine Mammals (Hall N).

Through a gift from the Chicago Zoological Society, the Museum received ten specimens of the rare emperor penguin, and one of the Adelie penguin, collected also by Admiral Byrd for that society's zoo at Brookfield, Illinois. These were exhibited alive at the zoo, and following their death were presented to the Museum. Various other birds were also presented by the same society. Work is now under way on a habitat group of the emperor penguins for the projected new Hall of Birds.

Three specimens of the strange Arctic sea mammal called narwhal were collected for the Museum by Captain Robert A. Bartlett, well-known explorer of the far north. The commission to collect these, like that assigned to Admiral Byrd, was made possible by the Emily Crane Chadbourne Fund. The specimens are to be used in a habitat group in the Hall of Marine Mammals.

The John G. Shedd Aquarium generously presented to the Museum a large and very valuable collection of fishes taken in Hawaii and Fiji by that institution's recent expedition to the South Seas. A large number of species are included, among them some especially rare or otherwise notably attractive ones.

While the Field Museum Anthropological Expedition to the Near East, sponsored by Mr. Marshall Field, and led by Assistant Curator Henry Field, completed its work and returned late in 1934, its results were not fully realized until 1935 when important accessions were received by the Departments of Botany, Geology and Zoology, as well as Anthropology. Accounts of this material will be found under each of the departmental sections of this Report.

Mr. J. Francis Macbride, Assistant Curator of the Herbarium, after his first vacation visit to this country in five years, returned to Europe in January to resume the botanical project commenced



PERUVIAN GRAVE
Hall 9

Reconstruction of a stone-lined grave at Ancon, Central Coast of Peru

the following: (1) the patient's condition; (2) the patient's wishes; (3) the patient's family; (4) the patient's physician; (5) the patient's community; (6) the patient's country; (7) the patient's world.

The first of these is the patient's condition. The physician should know the patient's condition, and the patient should know his own condition. The physician should know the patient's wishes, and the patient should know his own wishes.

The second of these is the patient's wishes. The physician should know the patient's wishes, and the patient should know his own wishes. The physician should know the patient's family, and the patient should know his own family.

The third of these is the patient's family. The physician should know the patient's family, and the patient should know his own family. The physician should know the patient's physician, and the patient should know his own physician.

The fourth of these is the patient's physician. The physician should know the patient's physician, and the patient should know his own physician. The physician should know the patient's community, and the patient should know his own community.

The fifth of these is the patient's community. The physician should know the patient's community, and the patient should know his own community. The physician should know the patient's country, and the patient should know his own country.

The sixth of these is the patient's country. The physician should know the patient's country, and the patient should know his own country. The physician should know the patient's world, and the patient should know his own world.

The seventh of these is the patient's world. The physician should know the patient's world, and the patient should know his own world. The physician should know the patient's condition, and the patient should know his own condition.

The eighth of these is the patient's condition. The physician should know the patient's condition, and the patient should know his own condition. The physician should know the patient's wishes, and the patient should know his own wishes.

The ninth of these is the patient's wishes. The physician should know the patient's wishes, and the patient should know his own wishes. The physician should know the patient's family, and the patient should know his own family.

in 1929 jointly by Field Museum and the Rockefeller Foundation. This work is now being continued by Field Museum independently, and has received splendid cooperation from leading botanical institutions in Europe. The project has for its purpose the making of photographic negatives of type specimens of plants, chiefly South American, which are preserved in herbaria abroad. From these negatives prints are made available, at cost, to botanists everywhere, and are proving of great value in the advancement of systematic botany. Thus far, somewhere in the neighborhood of 30,000 negatives have been made.

To various contributors of funds, and of material for the scientific collections, grateful acknowledgment is hereby made. Among cash gifts may be mentioned the following:

Sums totaling \$4,000 were received as gifts from Mrs. James Nelson Raymond, of Chicago, to be used toward the operating expenses of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures. This foundation was established by Mrs. Raymond in 1925 with a large endowment, and since that time she has generously contributed further funds each year.

From Mr. Leslie Wheeler, of Lake Forest, Illinois, gifts totaling \$1,000 were received. This fund was designated for the purchase of desirable specimens of birds of prey as opportunities arise.

From S. C. Johnson and Sons, Inc., of Racine, Wisconsin, a contribution of \$600 was received.

A contribution of \$500 was received from the American Friends of China, Chicago, for expenses involved in the cataloguing of the library bequeathed to the Museum by the late Dr. Berthold Laufer, including the employment of Mr. Kenji Toda for this purpose.

The Chicago Park District turned over to the Museum \$140,838.65, representing the institution's share, as authorized by the state legislature, of collections made during 1935 under the tax levies for 1934 and previous years.

Among the gifts of material for the collections, to which more detailed reference will be found in the departmental sections, and in the complete List of Accessions (p. 376), a few outstanding ones may be mentioned as follows:

Mr. A. W. Exline of San José, Mindoro Island, in the Philippines, presented four excellent skins of tamarao, a rare small species of buffalo found nowhere in the world except in the Mindoro jungles.

Mr. Exline hunted these animals for the Museum as a result of a suggestion made by Colonel Theodore Roosevelt at the time the latter was Governor-General of the Philippine Islands. One is being mounted for exhibition. Other material for the Department of Zoology was also sent by Mr. Exline.

What should be credited as a gift from Mrs. Emily Crane Chadbourne, since it was purchased with funds she provided, is a very important collection of some 2,500 birds representing more than 1,000 different species. These were selected from the large collection gathered by the late Henry Kelso Coale of Highland Park, Illinois.

The collection of birds of prey was greatly enlarged by the contributions of Mr. Leslie Wheeler, of Lake Forest, Illinois, which during the year amounted *in toto* to 480 specimens. Many of these were very rare or otherwise especially interesting species.

Frequent contributions of valuable material for the zoological collections were received from the following Chicago organizations: General Biological Supply House, John G. Shedd Aquarium, Chicago Zoological Society and the Lincoln Park Zoo (maintained by the Chicago Park District).

An interesting collection of bats, frogs and lizards, gathered in Barbados, West Indies, by Mr. Stewart J. Walpole, of Park Ridge, Illinois, was presented by him. A notable collection of reptiles was received as a gift from Mr. Stewart Springer of the Caribbean Biological Laboratories, Biloxi, Mississippi.

Among notable gifts received in the Department of Anthropology were eight ethnological objects of the Djukas of Dutch Guiana, presented by Mr. and Mrs. Maurice Berkson, of Highland Park, Illinois; eight pottery objects from ancient Kish, from the American Institute for Persian Art and Archaeology, New York; eighteen African musical instruments from Mrs. Laura C. Boulton, Chicago; and a lady's coat of the Ta Kang period of the Ching dynasty, China, from Miss Alice B. Robbins, Chicago.

Gifts to the Departments of Botany and Geology, while more minor in character, were extremely gratifying in number and aggregate value, and testified, like the gifts to the other Departments, to the great number of friends the Museum has in various parts of the world who frequently take the time and trouble to find and send material to this institution.

The Museum Library also was the recipient of many gifts. The outstanding one, a collection of 100 extremely rare and valuable

books which had formed part of the library of Mr. Stanley Field, President of the Museum, was presented by him. These books, most of them very old, some dating back as far as the sixteenth century, are especially valuable as source material. They include many which are notable as examples of the fine book making arts of a past era.

The Museum entertained many distinguished visitors during 1935, among whom may be mentioned the following: Professor Julian Huxley, noted British scientist and author, and Secretary of the Zoological Society of London; Dr. Roy Chapman Andrews, Director of The American Museum of Natural History, New York; Professor Ralph W. Chaney, paleobotanist of the University of California; Major-General Sir Francis Younghusband, well-known explorer and author, and former British Commissioner to Tibet; M. Maxime Ducrocq, noted French sportsman and Président du Conseil International de la Chasse; Colonel Theodore Roosevelt; Dr. E. L. Gill, Director of the South African Museum at Cape Town; Captain Harold A. White, of New York, sponsor and leader of several African expeditions, including two for Field Museum; Mr. George Eumorphopoulos, founder of the famous Eumorphopoulos Collection recently purchased by the British nation for the Victoria and Albert Museum; Mr. Robert Lockhart Hobson, Keeper of the Department of Ceramics and Ethnography in the British Museum, and cataloguer of the Eumorphopoulos Collection; Mr. Oscar Raphael, well-known British private collector of Orientalia; and Dr. William Berryman Scott, professor emeritus at Princeton University.

With the completion of Chauncey Keep Hall upon receipt of the last sculpture, that of a Beduin, from Miss Malvina Hoffman, the sculptor, final payment was made, fulfilling her contract. All the plaster casts of the Races of Mankind sculptures which had been at the Rudier Foundry at Paris were transferred to Marshall Field and Company's Paris branch for storage, awaiting removal to the Museum. Bronze reproductions of the Sara dancing girl and the Senegalese drummer have been sold to The American Museum of Natural History, New York.

During the year certain sums of money designated for the Library became available for use, and the various Departments were notified that they might make recommendations for purchase of such books as would be most useful, to the extent that these funds would permit. As a result, many books which had been needed, but the

purchase of which had had to be denied in previous years because of lack of funds, were acquired.

The expansion of the Library, due to the above acquisitions, the bequest of Dr. Laufer's many books, and to accessions from various other sources during the past few years, has been such that more space was required adequately to accommodate the books, pamphlets, and periodicals which now number approximately 100,000 volumes. By a readjustment of the workrooms of the Department of Geology, Room 120, across from the general library, was made available for the use of the Library. Shelves were installed, and various large and important collections of books were moved into this room.

A number of changes in the Staff occurred during the year.

Mr. Leslie Wheeler, a Trustee, was given an honorary appointment as Associate in Ornithology, in recognition of his deep and active interest in and support of the bird collection of the Museum. Mr. Wheeler is conducting important researches in the Division of Birds, in which he has been assigned an office-laboratory because of the great amount of his time he devotes to this work.

In recognition of the capable manner in which he has administered the Department of Anthropology as Acting Curator since the death of Former Curator Berthold Laufer, the Board of Trustees at its meeting held December 16 approved the appointment of Dr. Paul S. Martin as Curator of the Department, to become effective January 1, 1936. Dr. Martin, who formerly was Assistant Curator of North American Archaeology, has been a member of the Staff since 1929.

Several members of the Staff resigned during the year. They are Mr. J. Eric Thompson, Assistant Curator of Central and South American Archaeology, who accepted a position offered by the Carnegie Institution of Washington, D.C.; Mr. Ashley Hine, Staff Taxidermist in the Division of Birds, who wished to retire from his profession; and Mr. Franklin C. Potter, Guide-lecturer on the staff of the Raymond Foundation, who left to accept a position with the United States National Park Service.

Mr. John W. Moyer, formerly Assistant Taxidermist in the Division of Birds, was promoted to Taxidermist in Mr. Hines' place.

Mrs. Leota G. Thomas was appointed as Guide-lecturer to fill the vacancy left by Mr. Potter's resignation.

Mr. Bryan Patterson, formerly Assistant in Paleontology, was promoted to the position of Assistant Curator of Fossil Mammals.

Mr. Emmet R. Blake was appointed Assistant in the Division of Birds.

The title of Mr. J. Francis Macbride, formerly Assistant Curator of Taxonomy, was changed to Assistant Curator of the Herbarium, as being more appropriate to the duties assigned to him.

Mr. John B. Abbott, highly skilled preparator of fossil skeletons in the Division of Paleontology, died on August 6. He had been employed at Field Museum since 1901, and, except for a few intervals on leave of absence, had worked here continuously since that time. Under the provisions of the Field Museum Employees' Pension Fund insurance amounting to \$4,000 was paid to his widow. Also, under the provisions of this fund, insurance was paid in the following amounts to the beneficiaries of the policies of the following employees and pensioners who died during the year: \$4,000 to the two brothers of Mr. Percy L. Barrow, printer; \$4,000 to the daughter of Mr. John Manwell, pensioner; \$2,500 to the widow of James Adams, guard; \$1,500 to the widower of Mrs. Agnes Jansto, janitress.

Mr. Jacob F. Mangelsen, carpenter and preparator in the Department of Botany, died late in December. His insurance policy under the pension fund calls for the payment of \$4,000 to his estate.

A pension of \$45 a month, effective from July 1, was granted to Mr. Thomas J. Larkin, former guard, retired because of ill health.

In settlement of his claim for total disability benefits, payments of \$72.60 per month, to continue for a period of five years, were begun to Mr. Fred H. Geilhufe, former painter. This also was provided for by the group insurance policies carried under the Museum Pension Fund.

Among new employees added to the Museum personnel during the year are the following: Mr. James Quinn, appointed as a preparator in the Division of Paleontology to fill the vacancy caused by Mr. Abbott's death; Mr. A. L. Stebbins, employed as North Door attendant to take the place of Mr. Landee Hanson, who resigned; and two carpenters employed for construction work on exhibition cases in the new Hall of Birds.

Mr. Kenji Toda was temporarily employed to catalogue the large library of Oriental literature bequeathed to the Museum by the late Dr. Berthold Laufer. Funds for this purpose were provided by the American Friends of China, Chicago. As a volunteer worker, Professor F. E. Wood was also engaged upon this task.

A notable research project of a most unusual character was completed during the year by Assistant Curator Sharat K. Roy of the

Department of Geology. By exhaustive experiments in which parts of meteorites were exposed in sterile culture media to determine whether or not they contained extra-terrestrial bacteria, he refuted the theory propounded in 1932 by Professor Charles B. Lipman of the University of California that meteorites had brought life of extra-terrestrial origin to the earth. A complete detailed report on Mr. Roy's methods and findings has been made available in one of the Museum's Geological Series of publications issued during the year.

An interesting research project having for its object the determination of facts concerning the migration and hibernation of snakes, about which little has ever before been learned, was initiated by Assistant Curator of Reptiles Karl P. Schmidt, with the assistance of Assistant Curator Bryan Patterson of the Department of Geology, and Taxidermists Leon L. Walters and Edgar G. Laybourne. Having discovered an unusual colony of blue racers in the Indiana Dunes, these men marked a large number of the snakes so they may be recaptured and identified, much as research is conducted on birds by banding their legs. Further observations are to be made from time to time.

A number of skulls of rare species of bats were discovered, by Assistant Curator of Mammals Colin C. Sanborn, as the result of the transfer of some ethnological specimens containing bat skulls from the Department of Anthropology to the Department of Zoology. Discovery of one of the rarest plants in the world, growing wild at Joliet, Illinois, was reported by Mr. Paul C. Standley, Associate Curator of the Herbarium, whose attention was called to it by Mr. H. Forrer.

The fossil *Astrapotheres* in Field Museum's collection were the subject of very important research by Dr. William Berryman Scott, professor emeritus of Princeton University, who spent several weeks at the Museum engaged in these studies. Dr. Scott is one of the world's greatest authorities in the field of paleontology.

The output of scientific publications by Field Museum Press in 1935 was exceptionally large. A list of those issued will be found in this Report under the heading Division of Printing, and details concerning their distribution appear under the heading Division of Publications. As in the past several years, in addition to handling its own publications, the Museum handled sales, on a consignment basis, of books issued by other publishers. These included works of which members of the Staff were authors, or which, although written by others, were based on material in the collections of the Museum,

as well as some with no direct Museum connection but nevertheless on subjects within the scope of the Museum. Among additions to these were the following: *Before the Dawn of History*, by Charles R. Knight, published by the McGraw-Hill Book Company, New York, and containing reproductions of many of Mr. Knight's mural paintings of prehistoric life in Ernest R. Graham Hall; *The Magdalenian Skeleton from Cap-Blanc in the Field Museum of Natural History*, a monograph on the Magdalenian skeleton exhibited in the Hall of the Stone Age of the Old World, by Dr. Gerhardt von Bonin of the staff of the department of anatomy of the University of Illinois, published by the University of Illinois Press; *The Hawks of North America*, by Dr. John B. May, formerly director of ornithology of the Massachusetts Department of Agriculture, published by the National Association of Audubon Societies; and four new titles in the series of books (mentioned in the 1934 Report) on animals for children containing pictures of habitat groups in Field Museum. The pictures in the last appear in three dimensions when viewed through an optical device accompanying the books, which are published by The Orthovis Company, of Chicago. The various other books by Staff members, reported in the previous year, were continued on sale at the Museum in 1935.

The Museum was represented at the International Botanical Congress held at Amsterdam in September by Professor Samuel J. Record, Research Associate in Wood Technology (and professor at Yale University School of Forestry), and by Mr. Llewelyn Williams, Assistant Curator of Economic Botany.

Professor A. C. Noé, the Museum's Research Associate in Paleobotany (and member of the faculty of the University of Chicago) by special invitation delivered an address before the Seventh American Scientific Congress held in Mexico City in September. In the program of the same gathering was included a paper by Associate Curator Paul C. Standley of the Museum Herbarium. Mr. Standley was honored during the year also by the Panama Canal Zone Natural History Society, which elected him an honorary member in recognition of his valuable researches on the flora of the Canal Zone.

In order to extend the Christmas and New Year's Day holidays to a larger number of Museum employes, it was decided henceforth to close the Museum to the public on those days. This new policy was put into effect on Christmas, 1935. By this action guards, janitors and other employes are enabled to spend the holidays with their families, and only such employes as are necessary for safety remain

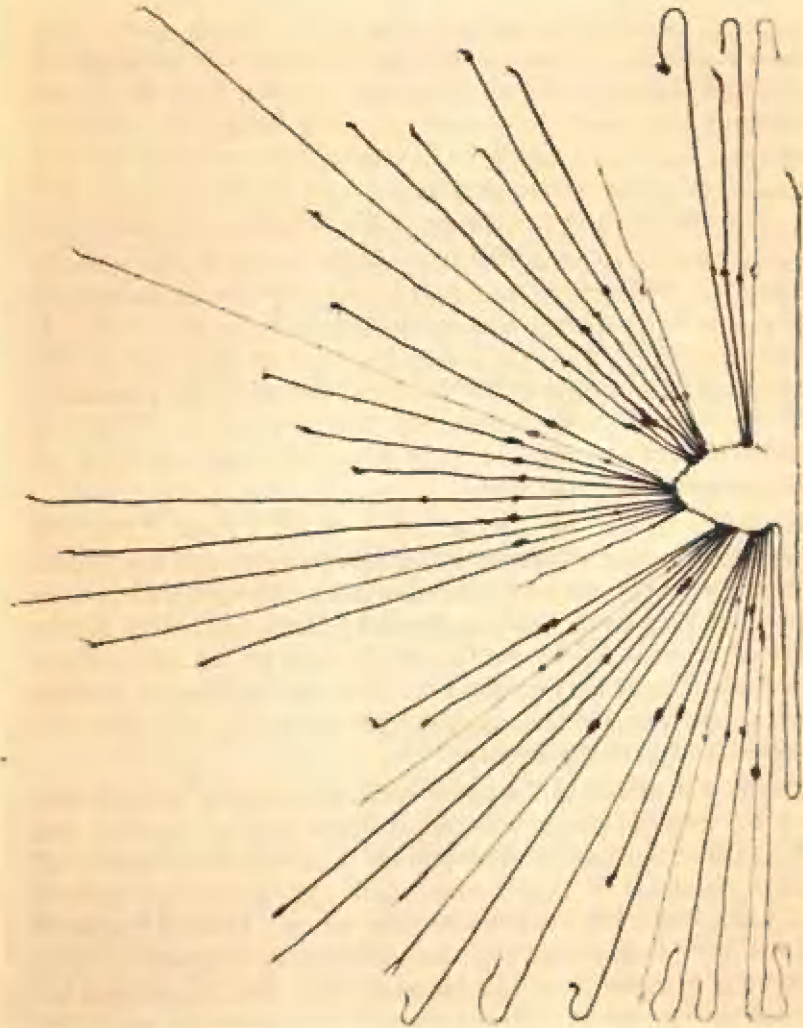
on duty. The closing causes little if any inconvenience to the public, as attendance on these days in the past has always been of negligible proportions.

Dr. Charles Baehni, of the staff of the Conservatoire et Jardin Botaniques of Geneva, Switzerland, returned to Europe after a stay of fourteen months in Chicago during which he was assigned an office in Field Museum and given facilities for research on the American flora and upon the Sapotaceae or sapodilla family. In addition, he assembled duplicate material to be sent to the Geneva Herbarium as the result of a cooperative project arranged by the Museum with Dr. B. P. G. Hochreutiner, Director of the Geneva institution.

During the greater part of 1935, as through most of 1934 and the last month of 1933, Field Museum has enjoyed the advantages of having a large force of extra workers assigned to it by state and federal unemployment relief agencies. In the year just closed this developed to a new peak, in regard to the number of workers assigned, and in the efficiency and productivity they developed. When the year ended indications were that this situation would continue for at least several months of 1936.

Practically all the workers assigned in 1935 came from two agencies, the Illinois Emergency Relief Commission, and the federal government's Works Progress Administration. However, there were also for short periods two men assigned by the federal Civil Works Educational Service, one by the United Charities of Chicago, and one by the Jewish Social Service Bureau. The total number of workers assigned at any one time has ranged from 48 to 188, with about an equal division of men and women.

Through the efforts of the many relief workers the Museum has made great gains in the completion of important cataloguing and recording tasks, sorting and preparation of specimens, repairing of specimens, issuance of publications, indexing, typing and general clerical work, and other work of a routine nature. Most of this work would not have been possible of accomplishment for years to come if the regular Museum Staff had been unaided. For years it has not been possible for internal activity to keep pace with the great collections accumulated by the many expeditions which the institution had in operation during its most active period of field work, which reached its greatest expansion, after steady growth, in the period between 1925 and 1931. The relief workers have been a great boon in assisting the Staff in the vast undertaking of classifying and recording all this material, which numbers many thousands of specimens



QUIPU

Hall 9

Accounting device used by Ancient Peruvians

of myriad kinds, and was congesting the storage facilities of all the scientific Departments.

But not only have the relief workers aided in such routine tasks as those above indicated—many have proved also to be skilled artisans, or at least to possess native ability making them susceptible of training for tasks requiring meticulous skill, and under the supervision of the regular Staff they have been able to give valuable assistance in the preparation of new exhibits or accessories for exhibits. Further, a few others are men and women who have actually had scientific or other professional training and formerly held responsible positions in institutions such as universities and libraries, and some of these have been given important research tasks to work upon. Officials of the relief agencies have expressed the opinion that the Field Museum project is one of the most outstanding and satisfactory of all the projects in the national program for social rehabilitation. Frequent visits of inspection were made by various officials of the Works Progress Administration. To record the activities of the WPA workers assigned to the institution both motion and still pictures were made at the instance of the federal government. While, compared to many other projects of the more usual public works character, the Museum project is on a small scale, it represents an ideal among work relief enterprises because of the wide variety of types of employment embraced, the high objectives of the work, the conditions under which it has been carried out, and the huge total of successful accomplishments it has produced.

In 1935 (*for details of relief work in previous years, see Annual Report of the Director, 1933, p. 27, and 1934, p. 164*) from the beginning of the year to about the end of April, and again from the middle of June until nearly the end of September, the Museum had workers assigned by the Illinois Emergency Relief Commission. These men and women were assigned in groups ranging from 48 to 117 in number. Their working time totaled 40,014 hours. The wages they received, paid by the state, amounted to \$24,394.

Beginning October 16, and continuing to the end of the year (under arrangements which are expected to continue during a considerable part of 1936) the relief workers assigned to the Museum came under the authority of the Works Progress Administration. The number of these WPA workers has ranged from 140 to 188, and their total working time to December 31 amounted to 50,239 hours. Wages, paid by the federal government, amounted during the period indicated to \$27,724.

The permanent value to the Museum of the work undertaken by these forces of relief workers in the aggregate, during the year 1935, is estimated at approximately \$95,000. This estimate is based upon the value computed by the heads of each Department and Division involved, and arrived at after consideration of the production of the workers and the probable cost to the Museum of a similar quantity and character of work if it were possible and desirable to employ privately a force of workers to do it at prevailing wages.

While there has been no payroll expense to the Museum as a result of this large additional personnel in its offices, laboratories and shops, there has, naturally, been some expense to the institution to provide materials, tools, and supplies of various kinds needed in the work. This cost in 1935 amounted to upwards of \$4,000.

Following will be found brief summaries of the accomplishments by the relief work forces in the various Departments and Divisions of the Museum during 1935:

DEPARTMENT OF ANTHROPOLOGY.—This Department had the services of five women under IERC; six men and four women under WPA. The total number of hours worked amounted to more than 5,100. A major task undertaken was the assembling of the many parts of a great stucco gateway from ancient Kish, Iraq, to restore it for exhibition in Hall K, where a new series of exhibits is projected. This work is still under way. Other work in this Department includes the mounting of more than 300 Peruvian textiles on linen, the mounting of more than 11,000 photographs on cards or in albums, writing captions for 2,700 of the photographs, typing more than 1,200 index cards, and 750 pages of notes, manuscripts, labels and other matter; the washing of 400 pieces of pottery, and of 250 bones and teeth, and numbering and wrapping same; the cleaning of 475 pieces of Sasanian stucco and repairing of a number of these; a large amount of proof-reading, and much work such as cataloguing, and clerical work of a wide variety. Estimated value of the work is placed at \$3,884.

As a part of the art project of the Works Progress Administration, certain important work for this institution was undertaken also outside the Museum building. This work consists of a series of sixteen enlarged reproductions in plaster of historic cylinder seals representing events from the Archaic to the Achaemenid periods in Assyria, Babylonia, Persia, and other ancient countries of the Near East area. These are joined together to form a frieze, 119 feet long and two and one-half feet wide, which will be installed on the walls

of Hall K, now under preparation for archaeological exhibits. Other exhibits in this hall will be composed principally of material acquired by various Museum expeditions of recent years, especially the collections obtained by the Field Museum-Oxford University Joint Expedition to Mesopotamia (1922-32) in excavations at Kish. Value of the frieze is placed at about \$15,000.

DEPARTMENT OF BOTANY.—From IERC this Department was assigned thirteen men and fifty-three women; from WPA eighteen men and seventy women; time worked amounted to more than 29,300 hours. Largest activity was in the Herbarium where more than 61,000 plants were mounted, 30,000 packets for plants made, and 146 shipments of plants packed, this work occupying the time of from 30 to 36 workers. Approximately 142,000 index cards were written. From three to six men with manual arts ability assisted the regular Staff on plant reproductions, and two others assisted on the dioramas of coffee and tea plantations, the first of which is already on exhibition. An artist supplied various drawings needed in the Department's work. Time of the other workers was divided among a multitude of tasks such as typing thousands of pages of manuscript, filing thousands of photographs, lettering case labels, and various sorts of clerical work. The value of the work is estimated at \$34,296.

DEPARTMENT OF GEOLOGY.—To this Department IERC assigned four men and one woman; WPA, six men and three women. This group worked an aggregate of more than 5,300 hours. One man, a trained optical mineralogist, conducted important research on the diamond, especially on some unusual specimens in matrix from Brazil. The results of his work will form a future publication. He also identified some 1,500 mineral specimens by inspection, and 520 by optical and microscopical methods. A trained paleontological preparator mounted several large and important fossil specimens for the exhibits. The time of others was devoted to the heavy task of moving the reserve collections of 16,000 geological specimens from Room 120, which was cleared for use of the Library, to Room 113; to arranging trays of specimens, repairing and cleaning 1,500 broken mineral specimens, numbering and classifying 10,250 specimens, cleaning the chemical laboratory apparatus, making plaster casts and models, correcting proofs, stone cutting, typing 25,000 index cards, copy for 600 printed labels, 8,200 storage labels, and 1,400 pages of manuscript, mounting and labeling 445 photographs, and a large amount of other general clerical work. The work in this Department is estimated to exceed \$5,000 in value.

DEPARTMENT OF ZOOLOGY.—Services were rendered in the Department of Zoology by twelve men and ten women from IERC; twenty-five men and nineteen women from WPA; two men from the Civil Works Educational Service, and one man from the Jewish Social Service Bureau. The total number of hours worked by all these was in excess of 18,300. The tasks accomplished were extremely varied. One of the workers with professional experience developed an improved technique for the preparation of skeletons of fishes, reptiles and amphibians which will henceforth be of great use to the Department, and is the subject of a proposed technique publication. Others with technical experience conducted research on the birds of Guatemala and Galapagos, identified specimens of birds and birds' eggs, determined a collection of moths, conducted research on snakes (including scale counts on 107 specimens), and catalogued collections. Some with experience or ability in handicrafts prepared accessories for the nilgai and leopard groups, and for proposed groups of African birds; repaired 222 bird skins; prepared models for proposed exhibits; and in various ways assisted the taxidermists. Many needed drawings and maps were made by an artist. General and varied work on the collections was performed by others, such as rearranging 1,045 trays of specimens for study purposes, tagging and cataloguing 7,500 specimens, arranging jars for alcoholic specimens, etc. In the osteological division some 930 small skulls were cleaned, and about sixty-five large skulls and skeletons or parts of skeletons. Identifications were made on 531 insect specimens. Indices were made for more than 5,000 species and genera of insects, and for 1,000 pamphlets and fifty-one volumes of collected papers on fishes. Photographs mounted number 1,150. An enormous amount of typing was done, including 12,780 index cards, 240 letters, 400 pages of manuscript, bibliographies, etc., as well as 22,930 handwritten labels and cards. A great deal of filing and other sorts of clerical work were also performed. The Curator's estimate of the value of all the work is \$16,933.

LIBRARY.—The Library has had the assistance of two men and two women from IERC; six men and three women from WPA, and one man from the United Charities. Their working time totaled something over 4,100 hours. The most important item was the binding and reconditioning of nearly 700 books and pamphlets, and the renovating of some 4,000 others which had been in a dilapidated condition. Other work done includes the writing of 7,000 index cards; filing of 23,600 cards; moving of 40,000 books in rearrangement of the stacks

and taking over Room 120 which has been added to the Library quarters; the unpacking and sorting of some 12,000 volumes; copying of manuscript; checking of books for cataloguing; and, by one man versed in languages, the translation of Russian, Czechoslovakian and Finnish material for cataloguing, and other bibliographical work. Estimated value of the work is placed at \$3,835.

DIVISION OF PRINTING.—Eleven men and two women, with experience in the various printing trades, were assigned to the Division of Printing by IERC; twenty-three men and three women by WPA. These included compositors, pressmen, monotype operators and casters, binders, etc., and they assisted the regular printing force in all classes of work. Working time totaled more than 8,000 hours—4,090 hours on publications, 820 hours on exhibition labels, and 3,130 hours on miscellaneous job printing, *Field Museum News*, and other tasks. The estimated value of their services is \$7,985.

DIVISION OF PHOTOGRAPHY.—To this Division three men and one woman were assigned by IERC; three men and two women by WPA. Hours worked amount to about 3,200. Those with experience in professional photography made 22,000 photographic prints. The others worked on the big task of cataloguing the collection of some 85,000 negatives, and other clerical work. Value of the work is placed at \$2,400.

RECORDER'S OFFICE, DIVISION OF PUBLICATIONS, AND DIVISION OF PUBLIC RELATIONS.—Two women from IERC and one from WPA served these offices jointly. Time amounted to more than 900 hours. Work was of a general clerical character, such as typing invoices, operating addressograph machine, wrapping packages for mailing, preparing *Field Museum News* for distribution, record entries, indexing, filing, etc. Value estimated at \$1,645.

DIVISION OF MEMBERSHIPS.—One woman was assigned to this Division, both under IERC and WPA. Hours worked amount to 480. Work was all clerical, consisting of rewriting 8,860 cards, sorting 12,275 cards, alphabetically arranging 28,885 cards, supplying telephone numbers on 3,445 cards, and handling about 600 other cards. Value of work estimated at \$665.

DIVISION OF MAINTENANCE, AND CHIEF ENGINEER'S FORCE.—To these Divisions, IERC assigned thirteen men, and WPA nineteen men. Aggregate hours worked were 8,100. Work consisted of a variety of maintenance tasks. Value of this work is placed at \$3,729.

An "ozonator" or air purifying machine was installed in the Museum and connected with the ventilating system for the James Simpson Theatre, in order to increase the comfort of audiences attending lectures, children's programs, etc. This apparatus keeps the air fresh and pleasant without causing chilliness or drafts. Tests made show that with the ozonator in operation the air in the entire auditorium can be cleared in a very few minutes, and all chance of accumulation of impurities in the air eliminated. Many members of audiences in the Theatre have commented on the improvement noted since installation of this apparatus.

The Museum continued its assistance to the study of art by Chicago students, through the Art Research Classes conducted in co-operation with the Art Institute of Chicago. The work has now been in progress since 1922, and is still in charge of the same instructor, Mr. John Gilbert Wilkins, of the faculty of the school of the Art Institute. There are classes in drawing, painting, illustration, design, sculpture, etc. Regular courses are held in the spring, autumn and winter, and a special summer class is provided for teachers and others whose employment makes it possible to attend only at that time. Altogether more than one hundred students are accommodated. A classroom and working facilities are provided by the Museum, and exhibits in the institution are used as subjects for study. As in past years, Mr. Wilkins reports, graduates have achieved professional success as creative artists and as teachers of art.

Also, the Saturday School of the Art Institute continued the sending of classes of young children to Field Museum. These include children ranging from fourth grade elementary pupils to those of high school age, and the enrollment in 1935 was forty-one.

The Museum continued its efforts to dispose of duplicate material no longer of use in this institution because it has been supplanted by superior material of the same nature. These efforts, which have for their aim not merely the money that may be realized through sale, but also the placing of this material in other institutions in which it will be of real value, have now been going on for several years, and have met with considerable success. Among items offered during 1935 are the X-ray machine and all accessory equipment from the Museum's discontinued Division of Roentgenology.

Economies in the costs of electric lighting for the building were effected by continuance of the measures initiated several years ago under the "peak load contract" whereby favorable rates are obtained by complying with certain restrictions.

The working forces under the supervision of the Superintendent of Maintenance and the Chief Engineer, with their customary activity, kept the Museum building and its appurtenances in proper order. Various improvements were, as usual, undertaken, of which some of the more important are noted below:

In Hall 21 (systematic collection of birds) all cases were opened, the screens upon which exhibits are mounted were removed for reinstallation, labeling and cleaning, and then replaced. With the exception of large groups, all cases in Hall H (ethnology of the Philippines) were removed to Room 38 (workshop of the Department of Anthropology) on the third floor for reinstallation, and afterwards replaced in the hall. Twelve cases in Clarence Buckingham Hall (Hall 35) and Frederick J. V. Skiff Hall (Hall 37) of the Department of Geology were opened for cleaning and relabeling. The hippopotamus and white rhinoceros were removed from Hall 15 (systematic collection of mammals) where they had been displayed on open bases, to Carl E. Akeley Memorial Hall (Hall 22) for reinstallation with habitat group type of groundwork in glass-enclosed cases—a move which will greatly improve the appearance of these exhibits. The bison exhibit in George M. Pullman Hall (Hall 13) was reinstalled in a larger case. An exhibition case was prepared and lighting installed for the new group of gelada baboons added to Akeley Hall.

All lighting fixtures in exhibition halls were cleaned. Ten exhibition cases in Hall 20 were wired for lighting projected new habitat groups of foreign birds, and lights were installed on two wall cases in Hall 21.

On account of the needs of the many extra workers assigned to all Departments by the Illinois Emergency Relief Commission and the federal Works Progress Administration, fifty new electric lights and six new glue pot outlets were installed in third floor work-rooms. Wiring in the studio of the Division of Photography was changed. In Rooms 54 and 52 (office of the Curator, and Library, of the Department of Anthropology) electrical switches were moved, and two fixtures and a base plug were installed. Similar electrical changes were made in Room 102 (preparators' room, Division of Paleontology).

Seventy-five rooms on the third floor, nine corridors, and ten stairwells were washed and painted.

The children's lunch room was washed and starched. Among important painting tasks were the corridor leading to the cafeteria, the President's anteroom, and the Director's office and reception

room. The President's office was washed. The balcony in which Hall 32 is located was washed and starched.

Tables, desks and chairs were distributed through the workrooms and offices of all Departments to provide for the relief workers, and five gas stoves needed in the work of some of them were connected.

An exhaust fan was installed in Room 17 of the Plant Reproduction Laboratories. Twenty-four cabinets in the Herbarium were moved to make room for new ones. A new pipe rack for lumber was erected in Room 38 (workshop of the Department of Anthropology). Gas, water, drain and electric pipes were torn from the walls of Room 56, assigned as studio to the Staff Artist.

The Department of Zoology's bone cleaning room on the ground floor was overhauled and painted, and there were installed in it a slate tank and a gas stove.

In the Division of Maintenance there were built, remodeled or repaired such exhibition cases, bases for exhibits, and other accessories of that type as were required for the various installations of new exhibits and for reinstallations which are detailed elsewhere in this Report under the Departments in which they occurred. All told, this work accounted for a large part of the time of the maintenance force.

A major task was the construction of ten built-in exhibition cases in the northwest quarter of Hall 20 for proposed new habitat groups of foreign birds. The plan on which these were constructed represents an innovation in that instead of the cases running in a straight line as in other halls of habitat groups, the façade is broken by taking the fronts of certain cases in on an angle so as to form recesses in each of which occur two other cases of lesser depth. By this means it is possible to accommodate more groups in the same amount of space, and increase the attractiveness of the hall. It is believed further that it will facilitate the movements of visitors at times when there are unusual crowds.

Extensive alterations, rearrangements, and additions of equipment were made on the third floor to increase the utility of the Library, and of offices, laboratories and workshops of the various departmental staffs, and to provide suitable accommodations for the Illinois Emergency Relief Commission and Works Progress Administration workers. The suite of offices assigned to the Curator of the Department of Anthropology and the library of the Department were rearranged, the work among other things involving the cutting



A COFFEE PLANTATION IN MINIATURE

Hall 25

São Paulo, Brazil

of a new three-foot doorway, complete repainting of walls and ceilings, and varnishing of floors, etc. To make additional room for the general Library involved extensive revisions of five rooms—Nos. 111, 113, 113-A, 113-B, and 120. Room 113-A is a new room, created by building a tile wall across the center of the chemical laboratory of the Department of Geology. This condenses the laboratory to one-half its former floor area without losing any space which could be used efficiently. These, and various other changes and improvements on the third floor, required a great amount of work such as building of many hundreds of feet of shelving, rebuilding of bookcases, transfers of storage cases and racks from one room to another, installation of new steel storage cabinets, provision of work tables, construction and installation of new ventilating hoods over special apparatus such as that in the chemical laboratory, installation of new plumbing, etc. In the photogravure studio a new metal tank was built for washing large photogravure plates. In Room 101, paleontological workshop, new double doors were provided to facilitate the passage of large mounted skeletons of fossil animals.

As for several years past, window repairs throughout the building formed an important item of maintenance work. The two large windows over the main stairways east and west of the north entrance had a general overhauling which included installation of new sills, repairing of jambs and cracked marble work, caulking of frames, resetting of glass, placing of new stools and aprons on the inside, and resetting of insulating panels and moldings.

On the second floor 142 windows received attention such as resetting of glass, repairing or replacement of sills, frames, sashes, etc., and painting of frames. Hinged ventilating sashes were installed in a few. On the third floor 162 windows received similar treatment, and a few on the fourth floor also received repairs.

In the boiler room the painting of all ceilings, walls, pipes, boilers and pumps was completed. Curtain walls were installed at the coal conveyor to keep out dust, and coal chutes were rewired to reduce consumption of electric current. Four new steel hopper fronts were installed, and thirty steel coal buckets were made. The wooden ladders to the coal pits were replaced with iron ones. Hot air siphons were installed on two boilers to improve combustion. The hot water circulating pump was repaired, as was the eight-inch check-valve in the fire line. A new wall was built between two of the boilers, and all brick work in boiler settings was carefully inspected and patched.

Under its contract with the John G. Shedd Aquarium, the Museum continued to furnish from its plant steam needed by the aquarium during the months when heat was required. A total of 12,159,985 pounds of steam was delivered to the aquarium.

In the following pages will be found detailed reports on the year's activities in each of the Departments and Divisions of the Museum:

DEPARTMENT OF ANTHROPOLOGY

EXPEDITIONS AND RESEARCH

During the year 1935 no expeditions were sent out from the Department of Anthropology.

Acting Curator Paul S. Martin completed a manuscript on the archaeology of Lowry Pueblo, Colorado. The material for this work was obtained during the course of four summers' excavations—1930, 1931, 1933, and 1934—by the Field Museum Archaeological Expedition to the Southwest, which was financed from the income of a fund provided by the late Julius and Augusta N. Rosenwald, and was led by Dr. Martin. This publication is a comprehensive report on the archaeology of a large pueblo site, and includes a detailed study of the masonry of Lowry Pueblo by Mr. Lawrence Roys, a structural engineer of Moline, Illinois, and a complete analysis of the skeletal material by Dr. Gerhardt von Bonin, Assistant Professor of Anatomy at the University of Illinois. This study may be available in published form early in 1936.

In December the Museum issued *Arabs of Central Iraq—Their History, Ethnology and Physical Characters*, a quarto-size book in the Anthropology Memoirs Series, written jointly by Assistant Curator Henry Field, Sir Arthur Keith, noted British anthropologist, and Professor Stephen A. Langdon, of Oxford University, who was Director of the Field Museum-Oxford University Joint Expedition to Mesopotamia (1922-32).

Assistant Curator Field has been engaged further in preparing a report giving the results of the 1934 Field Museum Anthropological Expedition to the Near East. This expedition continued the somatological researches on the peoples of the Near East, commenced by Mr. Field in 1925. The report will probably be ready for press some time late in 1936.

Mr. Field also had under way for future publication several ethnological reports on the Arabs.

Assistant Curator Wilfrid D. Hambly's report on *Culture Areas of Nigeria*, which covers the last part of the work done on the Frederick H. Rawson-Field Museum Expedition to Africa (1929-30), was published in June. He also prepared for publication a leaflet on Australia entitled *Primitive Hunters of Australia*, which may be expected off the press early in the coming year. Mr. Hambly likewise finished a report on the Maya skeletal material recovered from graves by former Assistant Curator J. Eric Thompson, who conducted the 1934 Field Museum-Carnegie Institution Joint Archaeological Expedition to San José, British Honduras. This somatological report will be published in one of the *Contributions to American Archaeology* of the Carnegie Institution of Washington, D.C. In addition, Mr. Hambly has been engaged in making a series of measurements on human skulls collected by Assistant Curator Albert B. Lewis as leader of the Joseph N. Field South Pacific Expedition (1909-13).

Mr. Richard A. Martin, formerly Field Director of the Syrian Expedition of the Oriental Institute, University of Chicago, has been temporarily added to the staff of the Department. He was assigned the task of cataloguing, classifying, and installing the archaeological material recovered at Kish during the twelve seasons of operations conducted by the Field Museum-Oxford University Joint Expedition to Mesopotamia (1922-32). Mr. Martin at the close of the year was engaged in setting up a very beautiful arched gateway of stucco from Kish. It is typical of the architecture of the Sasanian period (about A.D. 350).

During the year a portion of the valuable collection of archaeological material secured by Dr. A. L. Kroeber, Research Associate in American Archaeology and leader of the Marshall Field Expedition to Peru (1925-26), was shipped to him for study. Dr. Kroeber proposes to use this material in writing Part III of Volume II, in the Anthropology Memoirs Series of the Museum, the title of which is *Archaeological Explorations in Peru*.

By means of a fund of \$500 generously contributed to the Museum by the American Friends of China, Chicago, it has been possible to have catalogued most of the books written in Chinese which the late Dr. Berthold Laufer, former Curator, bequeathed to this institution. This work has been competently done by Mr. Kenji Toda of the University of Chicago, who has catalogued about 7,000 volumes.

Professor F. E. Wood, of Chicago, has voluntarily devoted most of the year to cataloguing the remainder of Dr. Laufer's library,

which consists of books written in Tibetan, Manchu, Mongolian, and Korean. About 200 books have been classified and properly shelved. Many more remain to be catalogued.

A great portion of the time of the staff of the Department has been devoted to correspondents, and to scholars, students, and other visitors calling for information.

Six signed and thirty-five unsigned articles and brief items were contributed by the staff of the Department to *Field Museum News*. The staff also supplied data used in twenty-one newspaper articles during the year.

ACCESSIONS—ANTHROPOLOGY

Accessions received and recorded during the year amount to twenty-two, of which seventeen are gifts, and five were obtained by exchange. The total number of objects received in these accessions is 719.

A very rare and beautiful Chinese mortuary clay figure of a dancing girl of the T'ang period was presented to the Museum by an anonymous donor in memory of the late Dr. Laufer.

Two gifts came from the Union of Soviet Socialistic Republics: one, from the State Museum of Anthropology, Moscow, consisting of two skulls; and the other, from the Institute for History of Material Cultures, Ukraine Academy of Sciences, Kiev, being a collection of 181 rare paleolithic implements of Russia.

An interesting collection of seventy-five Arabian ethnological objects, and six basalt blocks bearing Safaitic inscriptions, were presented to the Museum by Mr. Henry Field.

The American Institute for Persian Art and Archaeology, of New York, contributed one pottery jar, six pottery figurines, and one pottery head. These specimens date from the Sasanian period at Kish, Iraq, and were obtained by the Holmes Expedition to Kish, sent out in 1932-33 by the Institute jointly with Oxford University.

With the receipt of a bronze head of a Beduin, the work of Miss Malvina Hoffman, the Races of Mankind series of sculptures in Chauncey Keep Memorial Hall (Hall 3) was completed.

Dr. E. E. Burr, of the University of Chicago, presented two colored anatomical models of a human head. These models were cast so as to show a partial dissection of the musculature, nerves, and arteries.

Two basaltic blocks bearing Safaitic inscriptions were given to the Museum by Dr. E. W. K. Anderson, of Houston, Texas.

To Abbé Henri Breuil and Père de Chardin, of Paris, France, the Museum is indebted for a gift of 282 stone implements from near Dire Dawa, Ethiopia.

CATALOGUING, INVENTORYING, AND LABELING—ANTHROPOLOGY

Of the twenty-two accessions received during the year, seventeen have been entered. Nine accessions of previous years have also been entered.

Cataloguing has been continued, the number of catalogue cards prepared during the year totaling 891, of which 585 have been entered. The total number of catalogue cards entered from the opening of the first volume is 211,992.

The catalogue cards for the current year were distributed as follows: archaeology and ethnology of North America, 106; archaeology and ethnology of South America, 96; ethnology of Europe and Great Britain, 11; ethnology of Asia, 133; ethnology of China, 2; ethnology of Africa, 33; archaeology and ethnology of Near East (Kish), 436; physical anthropology, 74.

A total of 6,262 labels for use in exhibition cases was supplied by the Division of Printing. These labels are distributed as follows: Indians of the Woodland Area, 2; Mexico and Central America, 221; South America, 908; Alaska, 17; China, 1; Tibet, 723; Malay Archipelago, 68; Philippine Islands, 4,321; Stanley Field Hall, 1. The Division of Printing also supplied 182 captions for photographs and 2,510 catalogue cards.

The number of additional photographs mounted in the departmental albums is 516. To the label file 1,451 cards were added.

Much valuable clerical and repair work has been done by workers assigned to the Museum by the Illinois Emergency Relief Commission. This force of assistants, varying in number from four to six, worked six hours per day five days a week during the larger part of the period from January 2 to September 14. During this time 307 Peruvian textiles were repaired and mounted; 5,260 photographs were mounted on cards; and 2,303 captions, and 451 pages of notes and manuscript, were typed.

From October 16 to December 31, the state relief workers were replaced by a force of ten assistants assigned to the Department by the Works Progress Administration of the federal government. During this period 475 pieces of Sasanian stucco-work from Kish were cleaned; 28 pieces of Sasanian stucco were mended and restored; 400 pieces of pottery were washed; 250 bones were washed and num-

bered; 169 pieces of pottery were numbered; 300 sheets of manuscript were typed; 130 sheets of manuscript were proofread; 392 captions for photographs were typed; 725 captions were pasted on photographs; 5,900 photographs were mounted; 473 negatives were numbered; and 150 pieces of pottery were catalogued.

INSTALLATIONS AND REARRANGEMENTS—ANTHROPOLOGY

Installation of new collections and modernization of older exhibits has continued throughout the year. Most of the old-style black labels have now been replaced by shorter, more interesting statements printed in black type on buff cards, thus improving legibility. Fifty-nine cases have been relabeled in this manner.

The reorganization of Halls 8 and 9, devoted to Mexico, Central America, and South America, was completed under the direction of Assistant Curator Thompson. In Hall 8 were installed a case of Maya stone sculptures and two cases of pottery recovered from the San José ruin in British Honduras by the 1934 Field Museum-Carnegie Institution Joint Expedition, of which Mr. Thompson was leader. In Hall 9, new archaeological material from Brazil, the West Indies, Argentina, Colombia, and Peru was placed on exhibition. A special case showing a reproduction of two graves such as were constructed at Ancon, Peru, was installed (see Plate XXVII), and an unwrapped "mummy" pack displaying a desiccated body, was added to the hall.

A miniature model of the Temple of Quetzalcoatl, Mexico, was repaired by Works Progress Administration workers under the supervision of Acting Curator Martin, and placed in Hall 8. This model was acquired during 1934 in an exchange with the Mexican National Museum of Archaeology, History and Ethnography.

An interesting new exhibit in Hall 9 is a *quipu* or accounting device used by the Incas of Peru in computation (see Plate XXVIII). It consists of a long and fairly thick cord from which dangle groups of subsidiary cords on which are knots of two kinds—overhand and Flemish. These served as numerals in reckonings. *Quipus*, which are now quite rare, were used for such purposes as recording tribute payments, tallying herds of llamas, and computing vital and military statistics. The Museum's specimen was unexpectedly discovered in a stored archaeological collection purchased for the Museum some years ago by Messrs. Stanley Field, Henry J. Patten, and Charles B. Pike.

The reinstallation of Tibetan material in Hall 32 was completed. Assistant Curator Thompson installed cases containing the following

objects: a sacred apron worn by lamas and made up of forty-one carved pieces of human thigh bones (see Plate XXVI); shadow-play figures; masks. Acting Curator Martin supervised the installation of a coracle or boat made of skins. This boat was used several times by the late Dr. Laufer while traveling in Tibet as leader of the Blackstone Expedition to China (1908-10).

Also in Hall 32 was installed a large "calendar screen" from China which had been in storage for some years. This screen, about fifteen feet long and six feet high, is divided into twelve panels with floral decorations corresponding to plants and flowers which would bloom in the month which each represents. The designs are formed with the bright-colored plumage of kingfishers, and the screen is an object of exceptional beauty and delicate craftsmanship. It was obtained by one of Dr. Laufer's expeditions.

Under the joint supervision of Director Stephen C. Simms and Assistant Curator Albert B. Lewis, the reinstallation of forty cases in Hall H (Ethnology of the Philippine Islands) was completed in less than a year. This was an unusually difficult task, for much material which had never before been exhibited had first to be sorted and classified. It is now possible for visitors to secure a comprehensive idea of the everyday life of all the important tribes of the Philippines.

Plans for Hall K have been perfected. In the east third of the hall will be exhibited the archaeological material from Kish; in the remainder of the hall will be shown ethnological material from India, the Andaman Islands, Korea, and Siberia. Work on remodeling the hall has already been begun, and actual installation will be commenced early in 1936.

DEPARTMENT OF BOTANY

EXPEDITIONS AND RESEARCH

The Department of Botany conducted no collecting expeditions during 1935. Assistant Curator J. Francis Macbride continued his work, described in the Reports of 1929 to 1934 inclusive, of photographing type specimens of tropical American plants preserved in European herbaria. This project was initiated in 1929 partly with the assistance of funds furnished for several years by the Rockefeller Foundation.

Mr. Macbride's work during 1935 was continued in the DeCandolle and Delessert herbaria of the Conservatory and Botanical Garden of Geneva. There he received the most cordial support

of the Director, Dr. B. P. Georges Hochreutiner, who always has extended every possible facility for the execution of the photographic work. The summer of 1935 was spent by Mr. Macbride at the Natural History Museum of Vienna, where, through the courtesies extended by Dr. Hermann Michel, Director of the Museum, and by Dr. Karl Keissler, Director of the Botanical Section, he was enabled to photograph type specimens and study South American material. The herbarium at Vienna possesses the original collections of Poeppig from eastern Peru, and the classic Jacquin collections from the northwestern coast of South America, both of great importance to students of the South American flora.

The autumn and winter were spent by Mr. Macbride at the Botanic Garden of Madrid, where he was received most courteously by the Director, Dr. Antonio Garcia Varela, and given every assistance in his studies of the classic South American collections preserved there. The herbarium at Madrid contains the earliest large plant collections from South America, gathered by explorers dispatched by the Spanish government a century and a half ago to explore the natural resources of the nation's colonies. Of particular importance are the large collections made by Ruiz and Pavón, the first botanists to investigate the vegetation of Peru.

The great value of the photographs of type specimens becomes increasingly apparent as continued use is made of them. For monographic or other work with tropical American plants these photographs are invaluable, as is evident to all who have had the privilege of using them. The photographs obtained to date illustrate about 28,000 species, and are estimated to include about one-half of those otherwise available only in Europe. With the extensive series of herbarium specimens from various sources already available in the Herbarium of Field Museum, they give this institution what is, with scarcely any doubt, the most complete representation of the species of plants of tropical America that is to be found today in any American herbarium. Prints from the type photographs already on hand are made available by the Museum to botanists generally at the cost of production. During the past year 2,231 such prints were purchased by American institutions, and others were exchanged for similar type photographs.

Dr. Charles Baehni, of the Botanic Garden of Geneva, who came to Chicago in August, 1934, returned to Geneva at the end of September, 1935. As the result of a cooperative arrangement between the two institutions concerned, his time was spent in study



REPRODUCTION OF A TEA BUSH

Hall 25

In flower and fruit. From Southern China.



at Field Museum, enabling the Museum to make some return for the many courtesies extended by Dr. Hochreutiner at Geneva to facilitate the work done there by Assistant Curator Macbride. Besides making a monographic study of the Sapotaceae, Dr. Baehni assembled duplicate and other material as well as photographs of type specimens of plants, to be transmitted to the Botanic Garden of Geneva in partial return for the valuable duplicates already received from there by Field Museum, and it is believed that Dr. Baehni's visit will be of mutual advantage to the herbaria thus brought into closer relations.

The Herbarium has been used constantly during the year by the staff of the Department of Botany, and it has been consulted also by a large number of visiting botanists from various parts of the United States and other countries. It has been consulted most frequently by botanists of the numerous large universities that exist in or within a few hundred miles of Chicago, since it is the largest herbarium for many hundreds of miles in almost every direction.

The care of the collections and the determination of the extensive series of plants submitted for study have fully occupied the time of the Herbarium staff throughout the year. Through the employment of a large number of workers supplied by the Illinois Emergency Relief Commission and the federal Works Progress Administration, it has been possible to perform an exceptional amount of work, the direction of which has made heavy demands upon the regular staff of the Department. There have been mounted and added to the Herbarium, during about half of the year when such labor was available, more than 61,000 sheets of specimens, a remarkably high number for any herbarium, and slightly more than were mounted during 1934, when extra labor was available for a longer time. At the end of 1935 all current collections had been mounted, and there remained only a small quantity of old ones, which it should be possible to finish during the coming year. Much of the material mounted had been in storage for ten years or more, and its present availability for study greatly increases the value of the Museum collections.

A large private herbarium, purchased many years ago and now almost completely mounted, gives the Herbarium of Field Museum a fine series of the critical species of the flora of southern and middle Europe, which will be highly useful for study of the plant immigrants of the United States.

There were submitted to the Herbarium for study and determination 184 lots of plants, containing more than 9,000 specimens. Of these, 58 lots, comprising 5,059 specimens, were named and returned to the senders, while 126 lots, amounting to 3,948 specimens, were retained by the Museum. In addition, there were determined, but not preserved for the collections, many plants from the Chicago region and elsewhere that were brought to the Museum by visitors, teachers, and students, or forwarded by mail. Also there were answered by mail and telephone hundreds of inquiries for the most diverse information upon botanical subjects.

During the year Associate Curator Paul C. Standley published twelve papers based directly or indirectly upon the Herbarium collections. Several of these, dealing with American trees, appeared in *Tropical Woods*. To the same periodical Assistant Curator Llewelyn Williams contributed *A Study of the Caryocaraceae*, a small group of trees and shrubs of tropical America. The most important of Associate Curator Standley's papers, entitled *New Plants from the Yucatan Peninsula*, appeared in Publication 461 of the Carnegie Institution of Washington, D.C. Mr. Standley revised the manuscript of the *Flora of British Honduras*, prepared several years ago in joint authorship with Professor Samuel J. Record, of Yale University (Research Associate in Wood Technology for the Museum). This is to be published early in 1936 by the Museum. He also began work upon a flora of Costa Rica, at the request of the Director of the Museo Nacional of Costa Rica. During the year about two-thirds of the manuscript was prepared for this work, which is to be published by the Costa Rican government.

Members of the Department staff prepared for *Tropical Woods* many abstracts and reviews of current literature relating to tropical trees and shrubs, and contributed numerous signed articles and other items to *Field Museum News*, as well as data for many newspaper articles.

During September Assistant Curator Williams attended the meetings of the International Association of Wood Anatomists held in Amsterdam, Holland, in conjunction with the Sixth Botanical Congress.

ACCESSIONS—BOTANY

During 1935 the Department of Botany was the recipient of 241 accessions, comprising 25,138 specimens. The number of accessions was somewhat larger than in the preceding year, but the number of specimens was smaller, although probably not inferior in value

to those received in 1934. The accessions consisted of specimens for the Herbarium, for the exhibits, and for the wood and economic collections. Of the total number 6,225 were gifts, 11,315 were received in exchanges, 28 were obtained by Museum expeditions, 1,346 were purchased, and the remainder were acquired from miscellaneous sources.

Of the Department's total receipts of specimens, those for the Herbarium amounted to 25,035 items—plant specimens and photographs. Much material of outstanding value has been received, as usual, through exchange. Deserving of special mention is a collection of 2,110 specimens, from the Conservatory and Botanical Garden, Geneva, Switzerland, through the Director, Dr. B. P. Georges Hochreutiner. This consisted chiefly of Rubiaceae and Euphorbiaceae from tropical America, and included a major proportion of type or otherwise historically important material, as well as type material from Asia and Africa. A sending from the Riksmuseet of Stockholm, through Dr. Gunnar Samuelsson, consisted of 490 plants, principally from Brazil, Haiti and the Dominican Republic. From the Royal Botanic Gardens, Kew, England, through the Director, Sir Arthur W. Hill, were received 305 plants of Mexico and Colombia. The New York Botanical Garden, through the Director, Dr. E. D. Merrill, transmitted sendings of great practical value, amounting to 2,953 sheets, largely from eastern Asia.

Among the more important gifts of herbarium specimens received during 1935 may be mentioned the following: 216 specimens from Illinois and adjacent states, from Mr. Hermann C. Benke, Chicago; the private herbarium of the late Carl Buhl, Jr., of Chicago, amounting to 897 mounted sheets, chiefly from Illinois and Indiana, presented by his estate; 300 specimens of Bolivian plants, collected by Dr. Martín Cárdenas, of Potosí; 153 plants of the western United States, collected by Professor G. Eifrig, River Forest, Illinois; 115 Colombian plants from Rev. Brother Elias, of Barranquilla; 250 specimens of Iraq plants, presented by Mr. Henry Field, Chicago; 52 specimens of Yucatan plants, accompanied by copious notes and often by wood specimens, from Dr. Román Sabas Flores, of Progreso; 266 specimens of Michigan plants from Professor F. J. Hermann, Ann Arbor, Michigan; 102 specimens of Iraq plants from the Iraq Petroleum Company, Ltd., Haifa, Palestine; 575 specimens of Iraq plants from Mr. Yusuf Lazar, Bagdad; 657 plants, chiefly of North and South Carolina, from Mr. Donald C. Peattie, Chicago; 185 plant specimens, mostly Hawaiian, from Dr. Earl E. Sherff,

Chicago; 316 Costa Rican plants from Professor Manuel Valerio, San José; and 543 plants, principally trees and shrubs from tropical America, presented by the School of Forestry of Yale University, through Professor Samuel J. Record.

From the S. C. Johnson Brazil Carnauba Expedition there were received, as a gift, 376 herbarium specimens collected in the states of Ceará and Piauí; a quantity of large palm and economic material, still uncatalogued, from the same states and also from Bahia; and selected specimens preserved in formalin for use in the preparation of botanical exhibits.

Dr. Esmerino Gomes Parente of the Directoria de Plantas Texteis, Fortaleza, Ceará, contributed a small but choice collection consisting of thirty-two specimens of fiber-yielding plants of northeastern Brazil, including the various kinds of cotton in cultivation there.

As usual, some of the most valuable contributions of herbarium material have been acquired in return for the determination of the specimens. There may be mentioned particularly 500 plants from Sonora, Mexico, presented by their collector, Mr. Howard Scott Gentry, of Westmoreland, California. The University of Michigan forwarded, in continuation of similar sendings of previous years, 464 plants from the Yucatan Peninsula, chiefly from British Honduras.

Besides the accessions specifically mentioned, the Museum received much other valuable material from almost all regions of the earth, and particularly from tropical America. Details of these will be found in the List of Accessions for the year (p. 376).

As in other recent years, purchases of herbarium material were extremely limited, but there were obtained in this manner 966 specimens from Amazonian Brazil, 80 from Venezuela, and 300 from eastern Peru.

From the previously mentioned negatives of type specimens of tropical American plants made in European herbaria by Assistant Curator Macbride, there were added to the Herbarium several thousand prints, the majority of which represent species not previously available. Prints of all the series of type negatives received have now been inserted in the Herbarium.

The exhibits and study collections of economic material and woods were augmented by ninety-five items, in the form of gifts

or exchanges, from individuals and scientific institutions as noted in the List of Accessions.

The Armstrong Cork Company, of Lancaster, Pennsylvania, furnished specimens of cork bark and products made therefrom to replace some of the cork material on exhibition in Hall 28, and several acorn-bearing branches of cork oak (*Quercus suber*) were obtained from the Oroville (California) Station of the United States Department of Agriculture. Mr. B. A. Krukoff, New York, contributed seeds and fruits of palms and trees collected by him during 1929 in the lower Amazon Valley.

For exhibition in the series of domestic woods in Charles F. Millspaugh Hall (Hall 26) there were received a plank of tamarack from the Wisconsin Land and Lumber Company, Hermansville, Michigan; two boards of sycamore from the Eastman-Gardiner Hardwood Lumber Company, Laurel, Mississippi; wheel and log sections of Idaho white pine from the Potlatch Forests, Inc., of Potlatch, Idaho; and range maps of several exhibited Pacific Coast woods from Professor Emanuel Fritz, University of California, at Berkeley, who has for years been an important contributor to this exhibit.

From the Resources Corporation International, Chicago, through the courtesy of its president, Mr. Bruce L. Hoover, there were received twenty-one planks representative of the more important hardwoods growing in the State of Chiapas, Mexico, and now imported in commercial quantities into the United States. When installed these will form a distinct addition to the exhibit of foreign woods in Hall 27.

Various specimens of tropical American woods for study purposes were received from Yale University School of Forestry, through the continued cooperation of Professor Samuel J. Record, and from Dr. Román Sabas Flores, Progreso, Yucatan. Mr. Helmuth Bay, Research Associate in Forestry, Museum of Science and Industry, Chicago, presented fifteen hand specimens of commercial woods of Norway.

Other gifts deserving special mention were a specimen of blue poplar from Mr. O. G. Moore, Brownsboro, Alabama; photographs and a zinc cut of a Kentucky coffee tree growing at Palatine, Illinois, from Mr. Hermann C. Benke, of Chicago; and pine wood showing injury caused by a bullet, contributed by Mr. W. A. Summerhays, of Memphis, Tennessee.

As in the previous year, Mr. William E. Bletsch, of Highland Park, Illinois, arranged for the cutting of numerous hand specimens of North American woods for exchange. Mr. Bletsch, who was an Associate Member of the Museum, unfortunately died during 1935.

During 1935 the permanent study collections of the Herbarium have been increased by 61,411 sheets of plants and photographs, besides several thousand sheets bearing original printed descriptions of new species, or other material useful for study purposes. The total number of mounted specimens now in the Herbarium is 796,648. During the year there were removed from the Herbarium 600 duplicate sheets.

CATALOGUING, INVENTORYING, AND LABELING—BOTANY

The Department distributed through exchanges 15,509 herbarium specimens and photographs to forty-five institutions and individuals in North and South America, Europe, Asia, Africa, and Australia. Thirty-six lots of plants were lent for study to various institutions and individuals, and fifty-eight lots were received on loan, for study or determination.

Workers assigned to the Department by the Illinois Emergency Relief Commission and the federal Works Progress Administration assisted in the reorganization and orderly storage of reference material, and did many and various tasks of typing. Approximately 8,000 index cards were typed for the study collection of woods, and more than 133,000 were written in long hand for other card files, including a large number for exchange purposes in the relations established with herbaria in Geneva and Vienna.

In addition to labels for new exhibits installed during the year, the Division of Printing furnished a large number of buff labels to replace the remaining black ones on older exhibits.

INSTALLATIONS AND REARRANGEMENTS—BOTANY

Some important additions were made during the year to the exhibits of the Department of Botany. The most notable of these are the first two paintings in a series of murals illustrating interesting and remarkable plant forms from many parts of the world. These murals, while intended principally to picture plants of large size of which otherwise only small parts could find place within the physical limits of a museum exhibit, will also serve to represent a wide variety of plant formations, if not a complete ecological series. They bring into the exhibition halls outdoor scenes, indica-

tive of the native habitat of many of the plants represented in the botanical exhibits.

From photographs and other data gathered by the Department of Botany, the Museum's Staff Artist, Mr. Charles A. Corwin, has prepared preliminary sketches for fifteen paintings to fill the spaces available above the exhibition cases on the west wall of the Hall of Plant Life (Hall 29). All of the murals are to be eight by ten feet in dimensions. The two which were completed during 1935 may now be seen in the hall. They represent giant cacti of northern Mexico, and the baobab or monkeybread tree of central Africa. The third and fourth murals, which were well under way at the end of the year, show cucumber and passion-flower trees of the island of Socotra, and a dragon's blood tree of the Canary Islands. The fifth will be the *Araucaria* of the Chilean Andes. The sequence on the wall is not as here indicated, but will follow as far as possible the systematic order of the exhibits in the hall. The execution of the paintings is as creditable to the artist as are his many other contributions to the exhibits in other Departments of the Museum, and it is evident that not the least valuable feature of this series of murals will be its decorative aspect.

Another new exhibit which constitutes an innovation in the Department of Botany, and a step in the same general direction as the murals in providing an outdoor scene and synthesis, is a diorama showing on a small scale a modern Brazilian coffee plantation. This exhibit illustrates the most up-to-date methods of handling the crop. In the foreground is shown a field used for drying and fermenting the coffee, with its various features such as the conduit which conveys the coffee from the hulling machines. Behind the warehouses and other buildings, there stretches off in the background an expanse filled with rows of coffee plants (see Plate XXIX). This diorama has been placed with the exhibit of food plants in Hall 25 in proximity to collections of coffee and tea samples illustrating many types and grades. Provision has been made for a second diorama to show a tea plantation in Ceylon, which at the present writing is on the way to completion. Both of these dioramas are the work of Preparator John R. Millar.

During 1935, in conjunction with these exhibits there was completed and installed, in a separate floor case, a natural size reproduction of a tea bush in fruit and flower (see Plate XXX). With thousands of leaves, and hundreds of buds, open flowers and fruits, this celluloid reproduction of an entire bush has been an

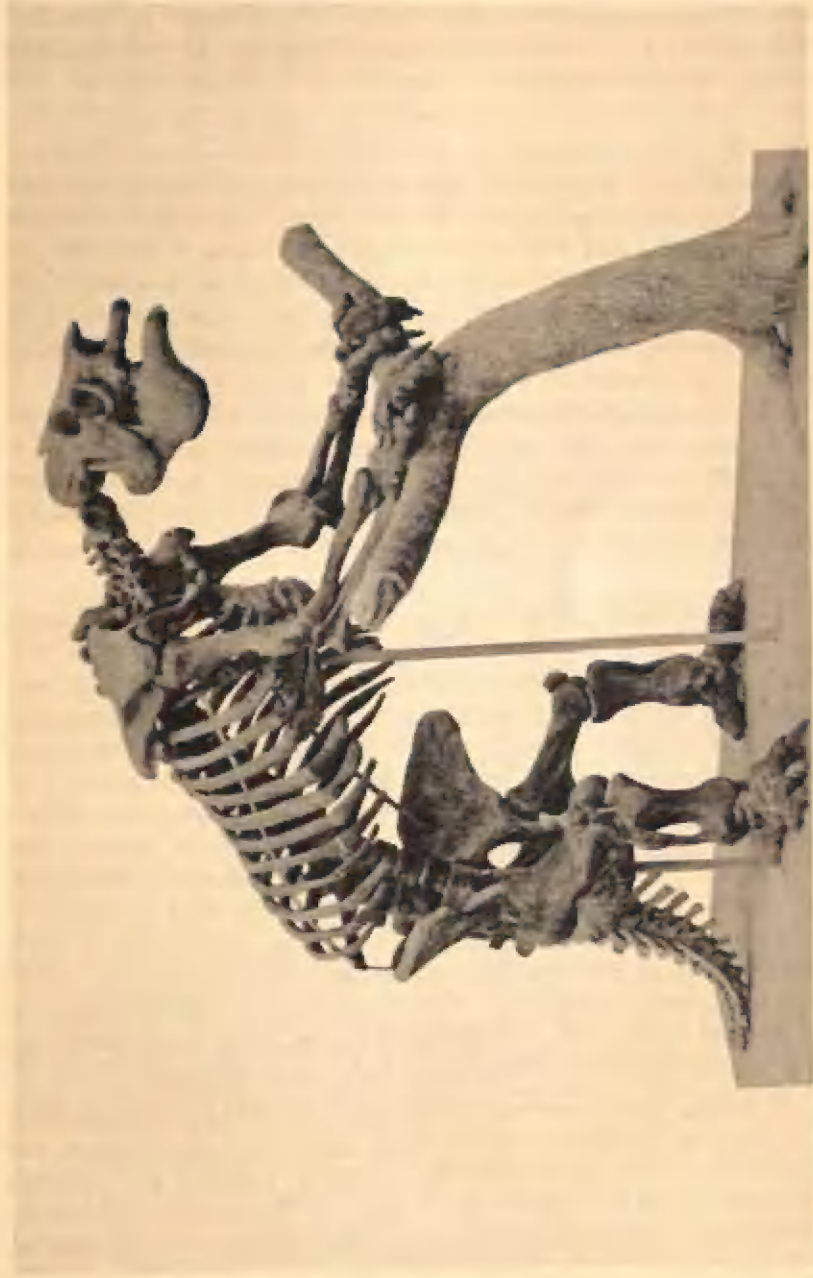
ambitious undertaking requiring much time and labor on the part of Preparators Emil Sella and Milton Copulos, together with various assistants drawn chiefly from the Illinois Emergency Relief and federal Works Progress Administration workers assigned to the Museum.

A branch of a tropical mistletoe with showy red flowers, collected on the Tapajoz River by the Marshall Field Botanical Expedition to the Amazon, has been added to the mistletoes in the Hall of Plant Life. A reproduction of a small fruiting branch of loquat or Japanese plum was also made during the year from material and sketches secured in the field several years ago, and now serves to augment the display of fruits of the rose family.

With the aid of selected workers sent by the Illinois Emergency Relief Commission and the Works Progress Administration, a large amount of work was done during the year toward the preparation of other botanical exhibits. These, however, have not yet reached a stage of advancement warranting their inclusion in the present Report.

Four new installations were made among the exhibits of North American trees in Charles F. Millspaugh Hall (Hall 26). Those added during the year were paper birch, material for which was presented a few years ago by the Berst-Forster-Dixfield Company, of Cloquet, Minnesota; holly, contributed in part by the Craftsman Wood Service Company, Inc., Chicago; and dogwood, the gift of Mr. Charles H. Barnaby, of Greencastle, Indiana. Another exhibit completed was that of tamarack, for which a trunk section was given by the Von Platen-Fox Company, of Iron Mountain, Michigan, and planks by the Wisconsin Land and Lumber Company, of Hermansville, Michigan. Photographs of trees and branches were added to several other exhibits to complete the installations. Five species of commercially important timbers of North America are still lacking in this hall. Material of two of these is on hand, but three woods from the west coast remain to be secured.

To reduce the too extensive display of Japanese woods in Hall 27, consisting of legacies from several expositions, duplication has been eliminated as far as possible, sometimes reducing the contents of a whole case by one-half. An instance is the recently reinstalled half-case of three woods of young coniferous trees, each represented by a number of cross-sections of the stem, cut at regular intervals from summit to base, and arranged to show the growth during successive periods of approximately ten years each. The wood



SKELETON OF THE GREAT FOSSIL SLOTH, *Megatherium americanum*

Ernest R. Graham Hall (Hall 38)

Specimen collected in the Pampa Formation of Central Argentina
by the Marshall Field Paleontological Expeditions, 1927

Prepared by Phil C. Orr

shows distinct layers or rings, each equivalent to one year's growth, and the well-known fact that the age of a tree may thus be told by the number of its rings is well illustrated by this Japanese exhibit.

In Hall 28, the exhibit of vegetable waxes was rearranged to include a small collection of rare waxes presented in 1934 by S. C. Johnson and Son, Inc., of Racine, Wisconsin.

The display of fermented and distilled beverages in Hall 25 received some attention, reproductions of fruits, pears, cashew, and a cluster of grapes modeled from nature, being added to illustrate the source of the corresponding beverages.

DEPARTMENT OF GEOLOGY

EXPEDITIONS AND RESEARCH

The Department of Geology conducted no expeditions during 1935. However, the Department received, as a result of the Field Museum Anthropological Expedition to the Near East which finished its work late in the preceding year, a large collection of sands, surface rocks, and fossils from the deserts of Iraq and neighboring countries, gathered by Assistant Curator Henry Field (Department of Anthropology), leader of the expedition. This supplements and adds to the importance of a similar collection made by the Marshall Field North Arabian Desert Expedition of 1927-28.

The chemical laboratory was closed for alterations during the first four months of the year and consequently less chemical work than usual was accomplished. This was partly compensated for by an increase in mineral identification by optical and crystallographic methods. The still, which was installed in the laboratory in 1934 for purifying old and discolored alcohol, was kept in operation through all but six weeks of the year. More than 1,100 gallons of old alcohol were redistilled for the Divisions of Fishes and Reptiles of the Department of Zoology, and approximately 850 gallons were thus recovered for further use.

For the Department of Anthropology, eighteen coins from ancient Kish, and four prehistoric copper bells from Arizona, were restored by the Fink electrolytic process. The heating values of three coals were determined for the Museum's chief engineer by calorimeter tests. Porosity tests on two stone meteorites were made as part of a research project on meteorites. The percentage of ash in piñon

wood, and the volume of soft wood ashes, were determined for the Department of Anthropology, to assist research in connection with an ash-filled room of the Lowry ruin excavated in Colorado by the Field Museum Archaeological Expedition to the Southwest in previous years. There were, as usual, the numerous daily quick qualitative tests needed for mineral determinations.

Dr. Alfred Walcott, working in the Department under a special arrangement, continued his studies of diamonds in the matrix from Brazil. He also identified by optical methods many doubtful specimens of minerals uncovered during the rearrangement of the reserve collections.

Studies and descriptions of fossil mammals collected by the Marshall Field Paleontological Expeditions to South America (1922-27), and of other collections, were continued by Associate Curator Elmer S. Riggs and Assistant Curator Bryan Patterson. The results of these studies appeared in two papers in the *Proceedings of the American Philosophical Society*, one a joint paper on Casamayor notoungulates, the other a description by Mr. Patterson of the osteology and affinities of the Paleocene amblypod, *Titanoides*. In the Geological Series of Field Museum, Mr. Riggs published a paper on the skeleton of *Astrapotherium*, and Mr. Patterson described a new species of *Argyrohippus*. Abstracts of three other papers by Messrs. Riggs and Patterson were presented at the winter meeting of the Geological Society of America. A bibliography of the literature on South American fossil mammals was prepared by Mr. Patterson and copied on cards. This laborious work constitutes a much needed reference index.

Professor William Berryman Scott, of Princeton University, spent several weeks in the Department making a study of the *Astrapotheria*, a little known group of South American ungulates. The results of his studies will appear in his forthcoming monograph on this order. Dr. Albert E. Wood, formerly of Columbia University, visited the Department for a week examining the collection of fossil rodents.

Assistant Curator Sharat K. Roy continued his studies in preparation of the monograph, *The Geology and Paleontology of South-eastern Baffin Land*, but progress in this work was considerably checked due to additional work caused by the transference of the study collection and rearrangement of the work rooms of the Department. A paper by Mr. Roy, entitled *Description of a Silurian Phyllopod Mandible with Related Notes*, was published by the

Museum in the spring. The mandible figured and described in this paper is the only one yet recorded from the Silurian of North America.

Mr. Roy completed in June a series of laboratory experiments, begun in 1933, to refute or confirm the reported discovery of living bacteria in stony meteorites by Professor Charles B. Lipman of the University of California. Four meteorites, known by the names Holbrook, Mocs, Pultusk and Forest City, were used in the investigation. The first three of these belong to the same falls as three of the five used by Professor Lipman in his final studies. The results of the experiments, published by the Museum, were negative, indicating that the living bacteria in meteorites found by Professor Lipman were contaminants. Mr. Roy also prepared a bibliography of the geologic literature on the Arctic regions.

Miss Elizabeth Oliver, volunteer assistant in paleobotany, engaged in identifying and classifying Mesozoic plant material, was called away early in the year to fill a teaching position. She identified some 200 specimens, and was mainly responsible for the substantial progress which has been made in the care and use of the study collection of fossil plants.

Members of the Department staff contributed nineteen signed articles and thirty shorter items to *Field Museum News*, and supplied data for twenty-eight newspaper articles. There were 235 correspondents and 202 visitors referred to the Department during the year for information and identification of several hundred specimens.

The activities of the Department were considerably increased by the employment of several workers provided by the Illinois Emergency Relief Commission and the federal Works Progress Administration. Although these men and women were not assigned to the routine work of the regular staff, they rendered valuable service to the Department. Through their assistance much clerical work, which had been set aside for lack of time, was completed.

ACCESSIONS—GEOLOGY

Forty-four accessions were recorded during 1935. Of these thirty-five were gifts, four were from previous expeditions and members of the Staff, and five were obtained by exchange. These accessions increased the Department collections by 1,750 specimens.

The most important accessions were skeletons of vertebrate fossils received from the United States National Museum, Washington, D.C., in exchange for a duplicate South American sloth specimen. A skeleton of the fossil horse, *Plesippus*, received from this institu-

tion, filled a gap in the Museum's series of fossil horses. Three extra skulls included in this exchange show three stages of tooth development. These are desirable additions to the study collection.

The Standard Oil Company of New Jersey presented eighteen specimens of vertebrate fossils collected by their field men in Argentina.

Other additions to the vertebrate fossil collections were a fossil fish, the gift of Mr. A. H. Sullivan, of St. Louis; two shark teeth, presented by Mr. Harold Rydberg, of Sarasota, Florida; and a tooth of *Uinatherium*, presented by Mr. Edwin B. Faber, of Grand Junction, Colorado.

An important accession is a collection of rocks, sands and fossils of desert regions gathered by Messrs. Henry Field and Richard Martin, leader and assistant respectively of the Field Museum Anthropological Expedition to the Near East, 1934. This collection includes 939 specimens of rocks and minerals, and 190 specimens of invertebrate fossils. Since the effects of arid climates on surface rocks and soils are exceptionally well-marked in these deserts, the collection provides material of unusual excellence as a basis for research on numerous unsolved desert phenomena. The sands have been very carefully collected. When systematically studied they should aid considerably in the interpretation of the general geology of the regions of their origin. The fossils are mostly internal molds, but all, with the exception of a few, are identifiable. They are of Mesozoic age and would be of value for stratigraphic and comparative studies.

Mr. K. Ogaki, of Fu-Shun, Manchukuo, presented a cabochon cut amber from Manchukuo, the only specimen of Asiatic amber in the Museum's collection. He also presented twenty-five fossil leaves from Manchukuo which, besides being a welcome addition to the exhibits, may provide material for research. A good specimen of iridescent agate from Oregon, placed on exhibition in H. N. Higinbotham Hall (Hall 31) was obtained by exchange with Mr. John A. Renshaw, of Arcadia, California. Three cones of living *Araucaria* from California were presented by Professor G. W. Graves, of Fresno, California, for comparison with fossil forms in the collection.

Two fossil cones of spruce, collected and presented by Mr. Charles N. Ackerman, Chicago, an Associate Member of the Museum, are of scientific interest. Found on the shores of Grass Lake, Illinois, in strata deposited at the close of the Glacial period, they indicate

the former presence of spruce forests at least 250 miles south of their present southern limits.

Mr. Stafford C. Edwards, of Colton, California, presented three specimens of the curious sand concretions found in the Salton Sink of California. Two other excellent spiral concretions from the Imperial Valley were the gift of Mr. Kenneth B. Garner of San Bernardino, California.

Examples of the three principal constituents of coal—vitrain, clairain and fusain—were prepared and presented by the Illinois State Geological Survey, which also presented a specimen of novaculite from southern Illinois. Three specimens of other forms of silica from southern Illinois, and a large trilobite, were the gift of the Speiden Company, of Chicago.

Six specimens of boron carbide presented by the Norton Company, of Worcester, Massachusetts, are examples of the second hardest substance known, being exceeded in this quality only by the diamond. One of these specimens has been placed on exhibition in Frederick J. V. Skiff Hall (Hall 37).

A gift, from the Philadelphia Quartz Company, of fourteen specimens of silicate of soda and the material from which it is made, has added interest to the exhibit displaying the uses of silica.

The Standard Oil Company of Indiana continued its policy of replacing deteriorated specimens in the group illustrating the uses of petroleum, presenting for this purpose 320 specimens.

Three specimens, one of glauconite, presented by Mr. Stanley Field, President of the Museum, and two of doucil, presented by the American Doucil Company, of Philadelphia, will form the nucleus for an exhibit of mineral water softeners, which have come into prominence in recent years.

Mr. Frank von Drasek, of Cicero, Illinois, who has been for several years a generous donor, presented eleven additional specimens of quartz crystals illustrating the minerals of Arkansas.

Specimens of four falls not hitherto represented were added to the meteorite collection by exchanging duplicate specimens with Professor H. H. Nininger, of Denver, Colorado.

Nineteen specimens of Cambrian trilobites, the gift of Mr. Harold Vernon, of Calgary, Alberta, Canada, are a welcome addition to the Museum's collection of invertebrate fossils.

Miss Elizabeth Oliver, of River Forest, Illinois, while working as a volunteer assistant in the Department, presented eight geologic

specimens, one of which, a pisolite from Braidwood, Illinois, is of exceptional interest.

CATALOGUING, INVENTORYING, AND LABELING—GEOLOGY

New entries recorded in the Department catalogues, now comprising twenty-six volumes, numbered 1,750. These, added to previous entries, give a total of 195,028. Copy for 1,273 specimen labels was prepared and sent to the Division of Printing, and 2,915 labels, including duplicates, received from the Division, were installed in the cases. In order to afford information regarding exhibits before the permanent labels are ready, 149 typewritten labels were installed. These are written on buff paper matching the regular label stock so as to present a fairly uniform appearance when installed in a case containing permanent labels. There were 649 labeled prints of photographs added to the Department albums, which now contain 8,385 prints. Fifty-eight United States Geological Survey maps were received, filed and labeled, making the number of these maps now available 4,290.

The cross-indexed card catalogue of photographs begun last year was completed. The card catalogue of meteorites has been kept up to date. No work was possible until late in 1935 on the card catalogue of minerals begun last year, as no assistants qualified for this work could be assigned to it.

Records of the entire collection of South American mammals obtained by the Marshall Field Expeditions, and by purchase and exchange, including collections from the Oligocene and middle Miocene formations, have been revised by Mr. Patterson. Specimens of these fossils have been permanently numbered to the extent of 3,797 pieces. Records of 312 specimens were entered in the card catalogue, and 480 determinations were made or confirmed and entered in the numerical catalogue of vertebrate fossils.

A bibliography of the literature on South American fossil mammals, made by Mr. Patterson, has been copied on 3,000 cards, and a similar bibliography on the Arctic regions, prepared by Mr. Roy, has been copied on 420 cards.

Illinois Emergency Relief and Works Progress Administration workers assigned to the Department prepared 25,000 catalogue cards, numbered 15,000 specimens, wrote 8,000 storage labels, cleaned 1,500 specimens and repaired 200 of them, and typed 1,400 pages on work of various kinds. An average of six of these workers served the Department during about forty weeks of the year.

INSTALLATIONS AND REARRANGEMENTS—GEOLOGY

All exhibition cases were numbered to facilitate ready reference to their contents. The tremors resulting from the fall of the Skyride Towers of A Century of Progress exposition, which were razed in 1935, caused much dust to fall from more friable specimens, necessitating the opening and cleaning of a number of cases.

The most important addition to the exhibits in Hall 34 is the Gladstone meteorite, acquired by purchase in 1928. This large meteorite is two feet high, one foot wide, nine inches deep, and weighs 1,400 pounds. It was found in 1914 near Gladstone in Queensland, Australia. It is installed in an individual case placed in a group of five other cases, each of which contains a large meteorite.

In Clarence Buckingham Hall (Hall 35) a case of volcanic products—lavas, volcanic bombs, etc.—was reinstalled, with the addition of much new material. Another case of volcanic products was dismantled, its contents being installed in accordance with a new plan. Many new specimens were added.

The case of cave products, consisting chiefly of stalactites and stalagmites, and cut sections of these illustrating their internal structure, was reinstalled with the addition of a number of large specimens received from A Century of Progress exposition.

Five colored transparencies of cave formations were placed in windows opposite the cave exhibit. The remarkable transparency showing the spine of Mount Pele, which had not been exhibited for some time, was placed in a window between the two cases of volcanic products. A case containing sections of veins and similar material was reinstalled, and to it were added a copper boulder and a number of other newly acquired specimens.

Plans were made for an extensive reinstallation of the west half of this hall and much of the preliminary work was completed.

In Hall 36 deteriorated specimens in two cases of petroleum products were replaced by fresh material, and the cases reinstalled. Two cases of oil sands were cleaned and reinstalled.

In Frederick J. V. Skiff Hall (Hall 37) many of the old black labels were replaced with new labels on the standard buff background.

Installations and changes in Ernest R. Graham Hall (Hall 38) were of major importance. The principal change was the replacement of the cast of *Megatherium*, one of the most prominent objects in the hall, by a skeleton (see Plate XXXI). This skeleton, of the great sloth *Megatherium americanum* from the Pampa formation of

Argentina, was mounted by Preparator Phil C. Orr. It is the first skeleton of this animal installed in any museum of North America. The last of the large casts in this hall has now been eliminated and there remain no large specimens that are not actual fossils.

A skeleton of the hitherto little-known South American mammal, *Astrapotherium magnum*, of the Miocene period, articulated by Preparator J. B. Abbott, was placed on exhibition (see Plate XXXII). The death of Mr. Abbott on August 6 was a severe loss to his associates in the Department, of which he had been Chief Preparator since 1902. A veteran collector, who had served on various expeditions in both North and South America, and one of the most outstanding men in his field, he was responsible for the preparation and mounting of many of the specimens now exhibited in Graham Hall.

Another rare specimen, a skeleton of the archaic Paleocene amblypod, *Titanoides faberi*, was mounted by Preparator James H. Quinn, ready for installation early in 1936. From this and other allied specimens in the Museum's collection, the structure and relationships of this animal have been made known for the first time.

Both of these skeletons, *Astrapotherium* and *Titanoides*, are the first specimens of their kind to be exhibited in any museum.

Two great fossil land-turtles, *Testudo* species, form another important new exhibit. One of these, measuring forty-eight inches in length, with a shell which alone is forty-two inches long by thirty-two inches wide, is one of the largest specimens of fossil tortoise so far reported from North America. Preparator Quinn mounted and installed the specimens, which include carapace and plastron of each, as well as the partially restored skeleton of the larger, and the skull of the smaller one.

Preparation of a large group of Pleistocene mammals from the asphaltum beds of Los Angeles was begun by Preparator Orr. The group is designed to include skeletons of four large mammals, *Equus occidentalis* (an extinct species of horse), *Bison antiquus* (primitive western bison), *Mylodon harlani* (a ground sloth), and *Smilodon californicus* (California saber-tooth tiger). These will be shown in a characteristic scene, in and about an asphaltum pool, indicating the manner in which the animals were mired and preserved.

The life-size restorations of *Mesohippus* (three-toed horse) and of a Neanderthal family in Graham Hall have been moth-proofed, and the reindeer in the Neanderthal group has been replaced by a better specimen.



SKELETON OF THE RARE FOSSIL MAMMAL, *Antracotherium magnus*

Ernest R. Graham Hall (Hall 38)

Specimen from the Santa Cruz Formation, Miocene Period, of South America

Prepared by John B. Abbott

The arrangement of invertebrate fossils in this hall remains substantially as before. Only minor changes, such as replacement of inferior specimens, and the making of additions to or rearrangements of the contents of the cases, wherever interest and value could thus be improved, were undertaken. Duplicate fossils from wall cases containing Paleozoic material were removed to avoid congestion.

In the case in Stanley Field Hall showing the comparison between living and fossil forms, three deteriorated invertebrate specimens were replaced by new material. Minor improvements in the installation were also made in this case.

A miniature sectioned model of the structure of the earth, showing the various layers in schematic form, was prepared by a Works Progress Administration modeler and painted by Assistant Curator A. B. Wolcott (of the N. W. Harris Public School Extension) under the direction of Curator Henry W. Nichols. It will go on exhibition as soon as preparations for its installation can be made.

Room 120, which had held all study and reserve collections except those of vertebrate paleontology, was made available for the use of the Library which required additional space for the proper accommodation of books. This necessitated a rearrangement of the work rooms of the Department to provide space for the displaced collections, involving complete dismantling and reinstallation of equipment in four work rooms and changes in another.

The invertebrate fossil collections which had filled nearly half of Room 120 were transferred to Room 111, formerly a preparator's work room. This room now accommodates both the fossil storage and the invertebrate laboratory. The preparator's equipment was transferred from Room 111 to 110, which had hitherto been used as the invertebrate laboratory.

Since the transfer of the collections, they have undergone extensive reclassification and rearrangement. This was the major task undertaken during the year by Assistant Curator Roy. So far only the plant and the Ordovician fossils have been put in order. There remain some 600 trays to be arranged. The method of arrangement adopted by Mr. Roy is as follows: the material is distributed according to the geologic period; within each period the specimens are then divided into the various phyla, and finally each phylum is subdivided geographically.

The motor-driven combined rock-cutting and grinding machine was transferred from Room 110 and reinstalled in the invertebrate

laboratory in a much improved condition. A new guard and two new saws, a diamond and a mud saw, were added to it, considerably enhancing its efficiency.

Three-quarters of Room 113, which held the chemical laboratory, was walled off to accommodate the remaining collections from Room 120, consisting of the reserve, structural, and economic material, and part of the lithological and mineral specimens.

The chemical equipment was installed in the smaller room, where it occupies only one-quarter of its former space. Nevertheless, owing to a more efficient arrangement of furniture and apparatus, it provides as many facilities as before.

The chemical supplies, which had been stored in the west end of the old laboratory, were moved to an adjacent room which was equipped with storage closets for the purpose. Specimens requiring greater protection than the standard storage trays can provide were also transferred to this room. The room is provided with apparatus for sampling and rock crushing.

Some additions to the working equipment in the chemical laboratory were made while rearrangements were in progress. An electric drying oven with automatic heat control has replaced the old gas oven, which required constant watching of the thermometer. The principal work desk has been provided with a ventilating hood to keep the air free of fumes. An apparatus, designed and built in the Department, has been installed in the still to save most of the time formerly required for refilling and cleaning.

The Department supplies for installation work, formerly kept in Room 120, were transferred to Room 116. This room, previously used for making geological models and for preparations of larger specimens, now serves the double purpose of a storage and an installation room.

These changes in arrangement of rooms and equipment occupied most of the time of Curator Nichols for nearly four months. While the work was under way, material accumulated during a period of many years was sorted out, and all that was adjudged worthless was discarded. It was also discovered that many of the old numbers painted on specimens were fading. This was not due to the age of the paint but to its gradual sinking into the porous rocks. To remedy the condition a new method of numbering has been successfully employed. A small rectangle of paint of contrasting color is first applied to the specimen to fill the pores. This paint, when dried,

provides the background on which the number is printed. This work has been assigned to two men from the relief organizations. To date, fifteen thousand specimens have been numbered, but many more require similar treatment.

DEPARTMENT OF ZOOLOGY

EXPEDITIONS AND RESEARCH

There were no regularly organized zoological expeditions in the field during the year. However, the Field Museum Anthropological Expedition to the Near East which concluded its work late in 1934, obtained a zoological collection of value and interest which was accessioned in 1935. This included mammals, birds, and reptiles, mainly from Iraq, collected by Messrs. Henry Field and Richard Martin of the Department of Anthropology. Since the Museum's collections from this part of the world are very scanty, this material was most welcome.

Cooperation with Captain Robert A. Bartlett, on his expedition to the Arctic, resulted in the acquisition of three skins and skeletons of narwhal from Greenland. Arrangements similarly made with Admiral Richard E. Byrd on his Second Antarctic Expedition, yielded five Antarctic seals from "Little America," of the species known as Weddell's seal and crab-eating seal. The Museum's participation in both of these expeditions was made possible by the Emily Crane Chadbourne Fund.

Ten specimens of emperor penguin, and a number of other penguins, also collected on the Byrd Expedition, were received as a gift from the Chicago Zoological Society.

At the invitation of Mr. Tappan Gregory, of Chicago, Assistant Curator Colin C. Sanborn spent two weeks in Marquette County, Michigan, where he made a collection of fifty-five small mammals, including some which will be used for exhibition purposes.

Mr. Edgar G. Laybourne, Assistant Taxidermist, collected snakes and lizards in Colorado during a vacation trip extended for the purpose, and obtained material for the preparation of an exhibit of the prairie rattlesnake.

The following seven publications by members of the Staff and others, were issued in the Museum's Zoological Series during the year: *New Fishes Obtained by the Crane Pacific Expedition*, by Dr. Albert W. Herre, of Stanford University; *A New Crocodile from the Philippine Islands*, and *Notes on the Breeding Behavior of Lizards*,

both by Assistant Curator Karl P. Schmidt; *A New Skink from Mexico*, by Professor Edward H. Taylor, of the University of Kansas; *New Mammals from Guatemala and Honduras*, by Assistant Curator Colin C. Sanborn; *A New Generic and Family Position for Bufo borbonica*, by D. Dwight Davis, Assistant in Osteology; and Part VIII, *Catalogue of Birds of the Americas*, by Associate Curator Charles E. Hellmayr.

Publications by Staff members which appeared under other than Museum auspices include the following: "Amphibians and Reptiles of the Chicago Region," by Karl P. Schmidt and Walter L. Necker, *Bulletin, Chicago Academy of Sciences*, Vol. 5, pp. 57-77; "Gonadectomy and a New Secondary Sexual Character in Frogs," by D. Dwight Davis and C. R. Law, *Science*, Vol. 81, pp. 562-564; "Our Vanishing Game," by John W. Moyer, *American Field*, June, 1935; "Along Darwin's Trail in South America," by Wilfred H. Osgood, *Scientific Monthly*, Vol. XL, pp. 73-77; and "The Ethiopians and Their Stronghold," by Wilfred H. Osgood, *Natural History*, Vol. XXXV, pp. 286-298.

Contributions of the zoological staff to *Field Museum News* included eighteen signed articles and fifteen brief notes; and cooperation was extended in the preparation of thirty-one articles for newspapers.

Research was continued from time to time by Curator Wilfred H. Osgood on Chilean and African mammals, especially those obtained by the Field Museum-Chicago Daily News Abyssinian Expedition (1926-27) and the Straus West African Expedition of Field Museum (1934). Assistant Curator Sanborn devoted available time mainly to studies of bats, preparing reports on the rarer neotropical species in the Museum and on various African bats, particularly those of the Straus West African Expedition. He also studied the mammals received through the Field Museum Archaeological Expedition to the Near East (1934). Material was accumulated for a revision of the American members of the chiropteran family Emballonuridae and preliminary studies were made. Work was continued in compiling a list of the genera of bats and indexing other literature pertaining to them.

In the Division of Birds, Associate Curator Hellmayr, working in Europe, mainly at the Vienna Museum, concluded studies of the smaller passerine birds and began preparation of the final parts of the *Catalogue of the Birds of the Americas*. These parts will be devoted to the raptorial birds, the game birds, and the water

birds. Assistant Curator Rudyerd Boulton devoted available time to African birds, especially certain genera, and Assistant Emmet R. Blake proceeded with identification and study of the birds received from the Mandel-Field Museum Zoological Expedition to Venezuela (1932), and the Leon Mandel Guatemala Expedition for Field Museum (1933-34).

Research on reptiles and amphibians was centered, mainly, in two fields, upper Central America and southwestern Asia. The collections made by the Leon Mandel Guatemala Expedition were studied with others from Honduras and British Honduras made available by loans from the Museum of Comparative Zoology, Cambridge, Massachusetts, and the Carnegie Museum, Pittsburgh. Two papers by Assistant Curator Karl P. Schmidt were completed—*The Salamanders of Guatemala* and *New Species of Amphibians and Reptiles from Honduras*. The collections from Iraq and Persia were partly identified and will warrant an extended report. A small Bahaman collection received from Dr. L. A. Hodsdon, of Miami, Florida, made necessary a review of the Bahaman reptiles in Field Museum, which resulted in a brief report for publication as *Notes on Bahaman Reptiles*. A collection of Angolan frogs and toads collected by the Pulitzer Expedition of the Carnegie Museum was identified at Field Museum, and a short report was prepared here upon them. This is to appear in the *Annals* of the Carnegie Museum. The local fauna, on which observations of varying importance are made from year to year, was summarized in a joint paper by Mr. Walter L. Necker and Mr. Schmidt, published by the Chicago Academy of Sciences. This paper was written especially to serve as a technical background for the popular leaflets on the reptiles of the Chicago area, and to stimulate further study in the local field.

Assistant Curator Alfred C. Weed made preliminary studies on new and interesting fishes obtained by Mr. Henry Field in the Near East, and also on new and rare fishes collected in Hawaii and Fiji by members of the John G. Shedd Aquarium staff during their expedition to the South Seas, and presented to the Museum by the Aquarium. Reports on these collections are in course of preparation.

Assistant D. Dwight Davis worked on problems in the anatomy of amphibians, and made a survey of the distribution of Bidder's organ in toads. This resulted in several additions to existing knowledge of the relationships of the animals involved and in new light on the nature of the structure itself.

ACCESSIONS—ZOOLOGY

Accessions in 1935 totaled 9,611, which is about 12 per cent less than in 1934, and about 25 per cent less than the average of the last ten years. This is a good showing, in view of the lack of expeditions, and is due to the receipt of an unusual number of gifts, to notable exchanges, and to especially advantageous purchases at small cost. The distribution of accessions by zoological groups is as follows: mammals, 1,208; birds, 3,240; amphibians and reptiles, 2,309; fishes, 512; insects, 2,171; lower invertebrates, 171. Included in the totals for mammals, birds, and reptiles are 165 skeletons. The number credited to Museum expeditions is 1,311; to gifts, 4,129; to exchanges, 1,126; to purchases, 3,045.

Notable among the gifts of mammals were nine African and Australian mammals presented by the Chicago Zoological Society, and one polar bear received from the Lincoln Park Zoo through the courtesy of the Chicago Park District.

From Mr. Henry Field, of Chicago, were received thirty mammals collected in Iraq. A fox and a badger from Mr. J. H. Dekker, stationed in Iraq; a bear skeleton from Mr. Austin Eastwood, of Bagdad, Iraq; and a hyena from Iran (Persia), gift of Dr. Erich F. Schmidt, of Rayy, Iran, received through the interest of Mr. Field, have added greatly to the interest and value of the Museum's small collection from the Near East.

Mr. A. W. Exline, of San José, on the island of Mindoro in the Philippines, collected and presented four specimens of the rare tamarao buffalo of that island, including a bull with horns of record size. Mr. Stewart Springer, of Biloxi, Mississippi, sent some unusually small moles from Florida representing a form new to the collection. Major Wallis Huidekoper, of Twodot, Montana, presented three fine wolf skins. A series of nineteen skulls of coyotes, skunks, bobcats, and badgers was received from Mr. W. R. Thomas, of Rapid City, South Dakota. From Leicestershire, England, Mrs. A. E. Burnaby sent ten specimens in alcohol, including three bats, a weasel, a water rat, and five moles.

Gifts of bats, from Panama, the West Indies, the Philippines and China, totaling 353 specimens, were received. Most notable were 307 specimens from Panama presented by the Museum of Comparative Zoology of Harvard University. Dr. Alfred E. Emerson, of the University of Chicago, was the donor of seventeen bats from Panama, including forms new to the collection. Dr. L. A. Hodsdon, of Miami, Florida, gave nine bats from the Bahamas, and Mr.

Stewart Walpole, of Chicago, presented ten bats from Barbados. Dr. C. C. Liu, of Soochow, China, presented three bats from there, one being an extremely rare form. The Department of Anthropology transferred to the Department of Zoology the skulls of seven rare fruit bats from the Philippines and New Guinea.

Important additions were made to the collection of mammals by exchange with other museums. The largest exchange has been with the United States National Museum, Washington, D.C., whence 311 specimens have already been received, and further exchange is in progress. From the Museum of Comparative Zoology at Harvard were received seven bats, and from The American Museum of Natural History, New York, eleven, by exchange.

Through the Emily Crane Chadbourne Fund exceptionally fine material was obtained by purchase. This includes the skins and skeletons of three narwhals, collected by Captain Robert A. Bartlett off north Greenland, and three Weddell's and two crab-eating seals from Antarctica, collected by the Second Byrd Antarctic Expedition. Other advantageous purchases include 185 West African, 175 Ecuadorian, and 83 Costa Rican mammals, adding many desirable species to the Museum.

A small collection of nine rare bats from Arizona was purchased. Gifts, exchanges, and purchases of bats added seven genera to the collection of this order, so that now the Museum has the fairly large total of 138 genera and more than 500 species and subspecies represented.

Sixty-six separate gifts of birds, totaling 644 specimens, were received from twenty-seven different donors. In these contributions is reflected especially the gratifying cooperation of local naturalists. Most important were those from Mr. Leslie Wheeler, a Trustee of the Museum, and the Chicago Zoological Society. Mr. Wheeler presented 333 specimens of hawks and owls, representing every major area in the world, and thus added greatly to the research facilities of Field Museum's fine study collection of birds of these groups. In addition, an excellent collection of 142 birds from Angola (Portuguese West Africa), four cuckoos and goatsuckers from Ecuador, and a partially albino robin, were presented to the Museum by Mr. Wheeler.

From the Chicago Zoological Society 106 specimens were received as gifts, among the most important being ten emperor penguins from "Little America." In addition to the skins of these largest of all penguins, seven complete skeletons and two completely em-

balmed specimens were preserved. Among other specimens of particular note were Adelie, Galapagos and black-footed penguins, saddle-billed stork, Galapagos albatross, Cape Barren and Australian pied geese, and many interesting pigeons and waxbill weavers from Australia. Skeletons were preserved of most of these specimens, which accounts in large part for the significant advancement of the osteological collection during the year. Sixty-one genera were added to this collection.

Among small but important gifts of birds received during the year were those from Major R. D. Hildebrand, of Buncombe County, North Carolina, Mr. Boardman Conover, of Chicago, Sir Charles F. Belcher, of Port of Spain, Trinidad, and Mr. Donald B. Hodgson, of Pochuta, Guatemala. The purchase of part of the noted H. K. Coale collection resulted in the most important accession of the year, numbering 2,556 specimens from Africa, Asia and Australia. More than 1,200 species are included, among them a large number of rare and infrequently seen genera which heretofore have been unrepresented in Field Museum.

Among gifts of reptiles and amphibians, the most notable were as follows: 380 specimens from various parts of the world, presented by Mr. Stewart Springer, of Biloxi, Mississippi, filling many gaps in the European and North American collections; from the Chicago Zoological Society, fifty-eight specimens, several of which were used for making reproductions for exhibition, while others provided valuable and much desired skeletal material; from Mr. Henry Field, and through him from officials of the Iraq Petroleum Company, 129 specimens from Iraq, forming an important addition to the Museum's growing collections from southwestern Asia; from Dr. Alfred E. Emerson, of the University of Chicago, seventeen specimens, supplementing the Museum's Panama collections; from Dr. L. A. Hodsdon, of Miami, Florida, eighteen specimens from the Bahama Islands, making possible a short publication (now in press) on this interesting fauna; from Mr. Stewart J. Walpole, of Chicago, twenty-seven specimens from Barbados, representing this island in the collections for the first time; from Mr. George Murray, Director of Agriculture of the Territory of New Guinea, eleven specimens from New Britain; from Mr. R. Marlin Perkins, of St. Louis, thirteen snakes, including little known coral snakes from Arkansas; and from Mr. C. Blair Coursen, who is the President of the General Biological Supply House, Chicago, forty-six specimens from Key West, Florida.



SPOTTED DEER OR AXIS DEER OF INDIA

William V. Kelley Hall (Hall 17)

Specimens collected by James Simpson-Roosevelts Expedition, 1925-26
Taxidermy by C. J. Albrecht. Background by Charles A. Corbin

Forty-eight reptiles obtained by purchase, chiefly from Florida, were used in the preparation of reproductions for exhibition. In return for identification of collections for other institutions, 440 specimens were obtained from Oklahoma, Angola, Cameroon and Honduras. Other specimens were exchanged with the British Museum, the Museum of Comparative Zoology at Harvard, the Carnegie Museum of Pittsburgh, and the Zoologische Staatssammlung in Munich.

Reptiles and amphibians received as a result of expeditions include 579 specimens from the Field Museum Anthropological Expedition to the Near East (1934), collected by Messrs. Henry Field and Richard Martin; and twenty-six specimens collected in Colorado by Mr. Edgar G. Laybourne of the Museum's taxidermy staff.

As a gift from the John G. Shedd Aquarium, 400 specimens of fishes were received from that institution's 1935 expedition to Hawaii and Fiji. These form the most valuable accession of fishes during the year. Several of the species seem to be new to science. Others were previously known from only a very few individuals. Several of the fishes were found in places far removed from localities where they had previously been recorded. The fact that these fishes were seen and studied in life, before their preservation in alcohol, makes them especially valuable.

Nineteen fishes received in an exchange with Professor Leonard P. Schultz, of the School of Fisheries, University of Washington, give the Museum a representation of forms previously lacking in the study collection. Mr. E. F. Vacin, of Oak Park, Illinois, presented three large trout that he caught in lakes near Laramie, Wyoming. One of these, a very large cut-throat trout, will serve as a fine example of this game fish for exhibition. Two small sharks, collected in Bermuda by Mr. Stewart J. Walpole, add an interesting species to the study collection. Professor H. W. Norris, Grinnell College, Grinnell, Iowa, has continued sending study material of sharks and related forms. The most valuable is a fine specimen of the rare shark *Aprionodon isodon*.

A small number of fishes brought back by the Field Museum Anthropological Expedition to the Near East (1934), proved very valuable. Many of them were secured east of Amara, Iraq, in a region that had previously been entirely closed to zoological collectors. Two species in the lot seem to be new to science.

Of the forty accessions of insects and their allies, the largest and most important was a gift of 1,145 specimens from Iraq, received from Mr. Henry Field, of Chicago. From Iraq and its bordering countries another desirable lot of 544 insects, scorpions and centipedes was obtained as a result of the Field Museum Anthropological Expedition to the Near East in 1934. Interesting species new to the collection were included in a small contribution of sixty-two specimens from Zululand, Africa, sent by Mrs. Barnett Harris, of Evanston, Illinois. Although three-fourths of the insects accessioned consisted of specimens from Asia Minor, a gratifying number of the smaller acquisitions comprised many desirable North American species.

CATALOGUING, INVENTORYING, AND LABELING—ZOOLOGY

The number of zoological specimens catalogued was 7,761. The entries were divided by subjects, as follows: mammals 1,360; birds 4,503; amphibians and reptiles 1,812; and fishes 86. In the Division of Mammals nearly 2,000 skulls were numbered and labeled and about 1,600 bottles and boxes were relabeled with new names. About 2,000 cards were added to the index of mammal specimens, and 200 specimen trays were provided with labels. A guide to the genera in the collection was prepared and case labels for seventy storage cases were affixed. Case labels were placed on all exhibition cases in Hall 15 and George M. Pullman Hall (Hall 13). Sixty labels of a new form carrying distribution maps were provided for systematic exhibits of mammals in Hall 15.

Specimens of birds to a total of 4,503 were catalogued, reducing uncatalogued birds to approximately 4,000. The systematic exhibit of North American birds, numbering 842 specimens, was checked and indexed on cards. The card-index of the general collection of birds received 3,165 additions, and 2,234 specimen labels were prepared for new accessions. Data were compiled for 15,300 specimen labels to replace illegible labels. Fifty-two case labels were installed, and 73 tray labels were typed and placed in position.

As in previous years, cataloguing of amphibians and reptiles kept pace with accessions, and no uncatalogued material is on hand. The number of entries for the year is 1,812, of which 243 represent osteological material. The ninety-two exhibition labels for frogs and toads, salamanders, and snakes have been entirely rewritten, printed in larger and more legible type, and each provided with a map showing the distribution of the form in question. Much progress has been made in the labeling of the study collections.

The large tanks and jars, in particular, have been completely relabeled in the course of an extensive rearrangement of the collections.

Cataloguing of fishes was limited to eighty-six entries, other work being more urgent during the year. About one-tenth of the study collection was supplied with legible labels on the bottles, and individual numbered tags were attached to some 2,000 specimens.

Osteological material was catalogued under divisional subjects and also by card-index in the Division of Osteology, with a total of 226 entries. A survey of skeletal material showed 1,654 skeletons of higher vertebrates, including 686 mammals, 675 birds, and 293 amphibians and reptiles.

There were no entries made in the catalogue of insects. Besides pinning and pin-labeling the insect acquisitions of the year, considerable progress was made in preparing specimens in storage for similar treatment. From the several collections of North American beetles, the members of twenty-two families were assembled, identified, most of them repinned and relabeled, and arranged in fifteen new drawers. For this work 3,074 specimens, representing 489 species, were determined, and 498 name labels were written. For seven months the time of a volunteer assistant was used to assemble, determine, pin and pin-label various insects; and for nearly three months in the latter part of the year, the services of a competent Works Progress Administration worker were utilized for classifying undetermined moths in the Museum's collection.

Extensive progress was made in classifying, rearranging and systematizing all zoological collections. This has involved some changes in allocation of space, transfer of cases and material, introduction of guide-labels and other general labels, and thorough inspection of material. Twenty new storage cases were supplied for mammals and birds, six going to mammals and fourteen to birds. These made permanent rearrangements possible in which long-term projects, heretofore postponed, could be undertaken. The collection of birds was subjected to careful revision and various special collections previously held intact were catalogued and incorporated with the general collection. To provide better protection and prevent specimens from shifting about, 876 trays for birds were lined with sheet cotton. Bird skins to a total of 222 were repaired or reconditioned.

The study collection of reptiles has been rearranged, especially the specimens contained in large bottles and tanks. Both reptiles and fishes preserved in alcohol have been insured of remaining in good condition by extensive changing and reclaiming of alcohol. In the large collection of fishes about half the stock of preservative has been renewed.

Accumulated routine work, especially in the cleaning of skulls and bones in the Division of Osteology, was very greatly advanced. The preparation of approximately 2,000 mammal skulls leaves only a few hundred of these uncleaned, and makes way for the work of cleaning small skeletons. Twelve skeletons of large mammals were cleaned by a combination of maceration and hand methods. A number of small mammal skeletons and a few amphibian and reptile skeletons were cleaned by hand. By the use of dermestids (beetles) 155 bird skeletons, ten mammal skeletons, and ten reptile skeletons were cleaned. The bodies of two emperor penguins were embalmed and added to the series of vertebrate types preserved for study of the soft anatomy. In the macerating room two large cooking tanks, which had corroded, were removed and replaced by a stone macerating tank. Equipment was designed and built for degreasing bones and other material.

INSTALLATIONS AND REARRANGEMENTS—ZOOLOGY

Seven habitat groups of large mammals were completed and opened to the public in 1935. Five of these are in William V. Kelley Hall of Asiatic Mammals (Hall 17), the subjects being the axis deer, the common leopard, the snow leopard, the blackbuck and chinkara, and the nilgai. A group of elephant seals was installed in the Hall of Marine Mammals (Hall N), and one of gelada baboon was placed in Carl E. Akeley Memorial Hall (Hall 22).

In George M. Pullman Hall (Hall 13) there was added one systematic case showing the five principal species of South American deer.

The axis deer group has unusually fine pictorial quality and harmonious color tones. Five animals are shown in light tropical forest resting at midday. A handsome stag stands quietly under a large tree, while a younger stag and two does with a pair of fawns are lying at one side on a leafy forest bed (see Plate XXXV). The specimens were obtained by the James Simpson-Roosevelts Asiatic Expedition of Field Museum (1925-26) and the late Colonel J. C.

Faunthorpe. The group was prepared by Staff Taxidermist C. J. Albrecht, and has a background by Staff Artist Charles A. Corwin.

The common leopard is represented by a single animal which is effectively combined with a forest scene so as to indicate the character and habits of the species by direct portrayal and also by subtle suggestion. It appears in a menacing attitude in the branches of a wild fig tree reproduced from studies made through cooperation with the Bombay Natural History Society. The specimen used was obtained during the James Simpson-Roosevelts Asiatic Expedition. Taxidermy, background, and accessories for the exhibit are the work of Staff Taxidermist Leon L. Pray, assisted by Mr. Frank Letl.

The third Asiatic group to be completed during the year was one in which two species of antelopes are shown. These are the Indian antelope or blackbuck and the Indian gazelle or chinkara. Five animals are included, three of the blackbuck and two of the chinkara, shown in a setting of light scrub in semi-arid plains with low hills in the distance. This group was obtained by the James Simpson-Roosevelts Asiatic Expedition and Colonel Faunthorpe. It was prepared by Staff Taxidermist Arthur G. Rueckert and Mr. W. E. Eigsti. The background is by Mr. Corwin.

The snow leopard group (see Plate XXXIII), opposite the giant panda in the central section of Kelley Hall, is one of exceptional beauty and interest. This is not only because of the subject, conceded to be the most beautiful of the larger cats, but because of the stupendous grandeur of the scene in the high Himalayas in which it is displayed. Only three animals appear, an old female and two kittens sitting on a fallen log with a freshly killed pheasant before them to excite attitudes of playfulness and anticipation. Behind rises the magnificent snow-laden front of the Himalayas. Taxidermy is by Mr. Albrecht, and background by Mr. Corwin.

The nilgai group shows another typical animal of central India, a large and somewhat ungainly antelope in which the males are blackish or bluish, and the females light brown or tan in color. A feature of the group is the reproduction of a dhak tree bearing great masses of reddish flowers above the green foliage of its lower branches. The animals are grouped as in midday enjoying the shade of the tree. The specimens in the group were collected by Mr. D. W. Ellsworth while temporarily associated with the James Simpson-Roosevelts Asiatic Expedition. Staff Taxidermist Julius

Friesser and Mr. W. E. Eigsti prepared the group, and Mr. Corwin painted the background.

In the Hall of Marine Mammals (Hall N), an important addition was made by the completion of a group of northern elephant seal (see Plate XXXIV): This is one of the largest groups in the Museum and one which has involved much labor, study and expense. It was made possible through the generous cooperation of Captain G. Allan Hancock, of Los Angeles, and Dr. Harry M. Wegeforth, President of the San Diego Zoological Society. On Captain Hancock's yacht, the *Velero III*, Messrs. Julius Friesser and Frank Wonder, of the Museum's taxidermy staff, were taken to Guadalupe Island, Mexico, in 1933, and enabled to collect the specimens for the group and all necessary data. The finished group includes one magnificent bull and four females and younger animals. The bull measured approximately seventeen feet in length, and had an estimated weight of 5,000 pounds. The group was prepared by the collectors, Messrs. Friesser and Wonder. The background, painted by Mr. Corwin, shows an expansive seascape and a section of "Elephant Beach," the principal hauling ground of the seals on Guadalupe Island.

A group of the gelada baboon, added to the exhibits in Carl E. Akeley Memorial Hall (Hall 22), shows an old male seated solemnly on a rocky prominence with a female and a half-grown young baboon engaged, near-by, in exploring crevices in the rock. The group was prepared by Mr. Pray from material collected by the Field Museum—*Chicago Daily News* Abyssinian Expedition (1926-27).

Two screens of ducks in the North American series in Hall 21 were reinstalled, with eight replacements of specimens. Twenty-four case labels were provided for this series. In the synoptic series of birds of the world, two screens were installed. These show the important types of water birds of twelve families, including albatrosses, petrels, pelicans, cormorants, loons, grebes and frigate-birds.

Two special cases of the projected series of biological exhibits were completed and installed. One shows the extinct birds of North America, including the great auk, Labrador duck, passenger pigeon, Carolina parakeet, heath hen and three other extinct species; the other case shows foreign birds introduced by man, including the starling, house sparrow, ring-neck pheasant, Hungarian partridge and six other less known species. Appropriate labels call attention to gradual changes in a fauna that occur under natural conditions, and the greatly speeded-up changes caused by man's interference.

Cases for ten new habitat groups of foreign birds were constructed in Hall 20, and the preparation of six groups was undertaken. Two of these, the emperor penguins from "Little America," and plantain eaters from the West African rain forest, were well advanced toward completion. All the work on birds was done by Staff Taxidermists Ashley Hine (who retired from service during the year), and John W. Moyer.

A case of salamanders and frogs, in Albert W. Harris Hall (Hall 18), was rearranged to accommodate eleven new reproductions. These include two species of North American tree frogs; the remarkable African clawed frog; a large species of Australian tree-frog; the marbled, red-backed, and Great Smokies salamanders of the United States; the extraordinary eel-like *Amphiuma* of the south; the web-footed banana salamander from Guatemala, and the gill-breathing axolotl of the Mexican lakes. All these models are the work of Staff Taxidermist Leon L. Walters, and made by the cellulose-acetate process invented by him, and developed over a period of years in Field Museum laboratories. The larger American snakes were rearranged to make room for exhibits of the milk snake, striped racer, and blue racer, and the poisonous snakes were arranged to fill a complete half-case, with the addition of the two common vipers, the Florida coral snake, the western copperhead, pygmy rattlesnake, and the fer-de-lance of tropical America.

There remain a number of lizard and snake reproductions which were finished during 1935 and are ready to be installed in the coming year. The most notable of these are the Galapagos land iguana and the common East Indian monitor lizard, prepared by Assistant Taxidermist Edgar G. Laybourne under the direction of Mr. Walters.

A screen of skeletons of amphibians and reptiles was installed in Hall 19. This exhibit, in addition to a systematic representation of the principal types forming the group, is provided with illustrated diagrams demonstrating the central place these animals have occupied in the history of vertebrates and indicating the derivation of both mammals and birds from them. A series of fish skeletons was prepared and remounted for later installation in Hall 19 with the skeletons of other major groups of vertebrates. These installations were the work of Assistant Curator Edmond N. Gueret and Assistant D. Dwight Davis.

Volunteer work during the year was done by various young men, somewhat as student-assistants, but with very definite practical results in the care and use of the collections. In the Division of

Birds, Mr. Harold Hansen spent ten months, Mr. Sidney Camras, one month, and Mr. Robert Cutler, two weeks. In the Division of Osteology, Mr. Gerhard Roth was engaged for three months. Mr. Walter L. Necker worked on collections of amphibians and reptiles from time to time, altogether about two months. Mr. C. W. Carson, Jr., also worked in the Division of Reptiles for a period of six weeks. Mr. Rupert Wenzel contributed his services to the Division of Insects for seven months.

The employment of workers paid by state and federal relief agencies was continued with marked success, and great benefit to the progress of every Division in the Department. The number engaged varied from month to month, being reduced to none in May, and increased to a maximum of forty-one in December, with a monthly average for the whole year of eighteen.

The work done by this force, assigned in the earlier part of the year by the Illinois Emergency Relief Commission, and by the Works Progress Administration from October on, falls under three general heads: (1) Preparation of zoological specimens by hand work for permanent preservation in the study and reserve collections of the Museum. Examples of this are the cleaning of skulls and skeletons, the repairing and renovation of bird skins, and the pinning of insects. (2) Fabrication of accessories and materials for use in new exhibits. Examples are artificial leaves, flowers, and wax or plaster models. (3) Clerical and semi-clerical work, including typing, cataloguing, labeling, numbering, indexing, and arranging specimens; making drawings of specimens for illustration of reports; and bibliographic work or compilation of data from books or specimens.

THE N. W. HARRIS PUBLIC SCHOOL EXTENSION

As in former years, the activities of the Department of the N. W. Harris Public School Extension embraced the collecting, preparing and installing of natural history specimens in portable cases with informative labels, and the circulating of them in the public schools and other educational institutions of the city. In the preparation of various subjects, such as plants and flowers, reptiles, fishes, and some accessories which are highly perishable in nature, resort was made on an increasing scale to the cellulose-acetate process of reproduction so successfully developed in the Department of Zoology. This has proved of great value in representing with fidelity the color and form of many types of specimens used in Harris Extension cases. The material and specimens used were, with the exception

of a few economic subjects, all collected within the vicinity of the city of Chicago. The colored backgrounds used in many of the cases were also made from photographs taken in the same region and at the same time that the specimens were collected.

Despite the fact that the members of the Department staff were largely occupied in repairing 216 cases and in reinstalling entirely ninety-one exhibits, nineteen new cases were completed during the year. In addition to the new cases finished, a number of others are in a more or less advanced stage of preparation. Due to deterioration from long and constant use, thirteen exhibits were withdrawn from circulation. All of the cases were inspected, cleaned and polished during the school vacation in summer. There are now available for use in the schools, 1,212 cases, illustrating 407 different subjects. There are 676 cases devoted to 290 zoological subjects; 382 to eighty-seven botanical subjects; and 154 to thirty geological subjects.

During the past year there were 415 schools in Chicago which made daily use of the cases. These comprised 374 public schools, with an attendance of approximately one-half million pupils; nine private schools, including the University High School of the University of Chicago; and thirty-two parochial schools. In addition, cases were loaned to nine branches of the Chicago Public Library, eight branches of the Y.M.C.A., two Boys' Union League Clubs, and seven social settlements. To each of these 441 schools and institutions two cases were delivered fortnightly. Thus 882 of the exhibits were kept in constant circulation throughout the school year. The Department's two motor trucks traveled a total of 11,885 miles while engaged in delivering and collecting cases.

A number of requests were received from other sources for the loan of cases for special limited periods. In response to these, six cases were loaned to the Institute for Juvenile Research of the State Department of Public Welfare; five cases were sent to the Vacation Bible School of the Fourth Presbyterian Church; twelve cases were loaned to the summer camp of the United Charities of Chicago at Algonquin, Illinois; and fourteen were shown in a special booth at the International Live Stock Exposition, held at the Chicago Union Stock Yards.

That the service rendered by the Harris Extension is appreciated as a valuable adjunct to the work of the schools is manifested by the receipt during the year of several hundred letters of commendation from principals, teachers and pupils.

THE JAMES NELSON AND ANNA LOUISE RAYMOND
FOUNDATION FOR PUBLIC SCHOOL AND
CHILDREN'S LECTURES

The James Nelson and Anna Louise Raymond Foundation has provided, as in past years, several series of lectures, entertainments, and other activities for the benefit of children. These include the spring and autumn courses of motion picture programs presented in the James Simpson Theatre of the Museum, the guide-lecture tours of the exhibits available to parties of children throughout the year, and also the extension lectures given in classrooms and assembly halls of the schools. The number of groups coming to the Museum for conducted tours of the exhibition halls in 1935 was the largest since 1931; also, many schools not heretofore on the Foundation's list requested and received the extension lectures.

ENTERTAINMENTS FOR CHILDREN

The programs in the series of free motion pictures, presented in the James Simpson Theatre on Saturday mornings during the spring and autumn, were as follows:

SPRING COURSE

- March 2—American Bears; A Trip to Washington; In the South Seas; Chameleons.
 March 9—Babies of the Farm; Jungle Belles; Australian Animals; A Dyak Wedding.
 March 16—The Orang at Work and Play; The Javanese Farmers; Watching the Wayangs.
 March 23—Antelopes Seldom Seen; Daniel Boone and a New Trail.
 March 30—Wild Life at Home; Laying the World's Fastest Cable.
 April 6—Beetle Friends and Enemies; Trained Bird Fishermen; Glimpses of Quaint Gaspé.
 April 13—Monkey Capers; Jungle Vaudeville; Souvenirs of Singapore; The Wapiti of Jackson Hole.
 April 20—Mushrooms and Their Cousins; Peter Stuyvesant.*
 April 27—Nature's Weavers; Life of a Moth; Mounting Butterflies; Algonquin Adventures.

AUTUMN COURSE

- October 5—Adventures of Wrongstart, the Dog; The Mountain Goats; The Bear Family; Wrongstart Meets a Porcupine; Shooting the Rapids.
 October 12—Feeding the Fisheaters; Columbus Crosses the Atlantic.*
 October 19—'Neath Poland's Harvest Skies; The Dainty Hummingbird; Mammals in Strange Form; Old Man Trouble.
 October 26—Among the Igloo Dwellers; Winter in an Arctic Village; Odd Hoofed Animals; Elephants at Work and Play.
 November 2—Jungle Giants; The Veldt; The Wrestling Swordfish; The Prowlers.
 November 9—The Jenolan Caves; The Declaration of Independence.*

* Gift to the Museum from the late Chauncey Keep.

November 16—Winners of the West: The Departure of the Covered Wagons; Indians at Home; Buffalo Bill; The Pony Express; Within the Stockade.

November 23—A Rhinoceros Episode; Quaint Boats of Japan; Small Cats and Monkeys; Turtles of All Lands; Kangaroos.

November 30—The Lapps and Their Reindeer; Prehistoric Lake Dwellers; Wearers of Fur and Quills; Falling Snow.

In addition to the two regular series of entertainments, two special programs were offered in February as follows:

February 12—Lincoln's Birthday Program: Lincoln and His Mother; A President's Answer.

February 22—Washington's Birthday Program: Washington, His Life and Times.

Twenty programs in all were offered to the children of the city and suburbs. The total attendance at these entertainments was 34,004, of which 4,877 came to the special programs, 10,350 to the spring course, and 18,777 to the autumn series.

The following newspapers gave publicity to the programs: *Chicago Daily News*, *Chicago Tribune*, *Chicago Herald and Examiner*, *Chicago Evening American*, and *Chicago Daily Illustrated Times*.

An expression of appreciation for films loaned for the programs is herewith made to the United States Department of Agriculture, Western Electric Company, Canadian National Railways, Chicago, Milwaukee, St. Paul and Pacific Railway, Illinois Bell Telephone Company, Department of the Interior of the Dominion of Canada, and Swedish Bureau of Information.

MUSEUM STORIES FOR CHILDREN—RAYMOND FOUNDATION

Members of the Raymond Foundation staff prepared two series of Museum Stories for Children. Field Museum Press printed these in folder form, and copies were handed to all children attending the entertainments. The subject matter of the stories correlated with that of some of the films shown in the Simpson Theatre, or that of the talks, illustrated with colored slides, given by staff members in the schools. The titles of the stories in each series were as follows:

Series XXIV—The American Chameleon; Native Life of Australia; The Javanese and Their Plays; Antelopes; The Story of Quartz; The Beetles; Some Interesting Monkeys; Mushrooms and Their Cousins; Bird Weavers.

Series XXV—Northern Squirrels; Fishes That Walk, Climb and Fly; Hummingbirds; Eskimo Homes; Some Interesting African Plants; The Story of the Caves; Indian Tips; A Strange Member of the Turtle Family; The Swiss Lake Dwellers.

Remaining copies of these stories were placed in a holder at the North Door during the summer to be taken by visiting children.

The year's total distribution of Museum Stories for Children was 35,000.

LECTURE TOURS FOR CHILDREN—RAYMOND FOUNDATION

Classwork in the exhibition halls was extended to the following groups:

	Number of groups	Attendance
Tours for children of Chicago schools		
Chicago public schools.....	385	14,427
Chicago parochial schools.....	30	1,064
Chicago private schools.....	12	203
Tours for children of suburban schools		
Suburban public schools.....	142	4,612
Suburban parochial schools.....	3	118
Suburban private schools.....	5	94
Tours for special groups from clubs and other organizations.....	66	4,460

In all, 643 groups were given guide-lecture service and the attendance was 24,978. During the months of April, May, June, October and November the requests for guide service were far greater than could be handled by the present staff of the Foundation. During July and August, more special vacation groups were cared for than at any other time except in the month of July, 1930.

On December 3 and 5, the Museum was host to 1,500 boy and girl delegates to the Annual Congress of Four-H Clubs of the United States. Of this number, 1,050 were given special lectures in the halls devoted to prehistoric plants and animals, and in the Hall of the Stone Age of the Old World. The visitors expressed themselves as most appreciative of the courtesies rendered.

EXTENSION LECTURES—RAYMOND FOUNDATION

As in previous years, extension lectures were offered to the schools. Following are the subjects which were presented in classrooms and assemblies before audiences of both high and elementary school grades:

FOR GEOGRAPHY AND HISTORY GROUPS

Glimpses of Eskimo Life; South America; North American Indians; Glimpses of Chinese Life; Native Life in the Philippines; The Romans; The Egyptians; Migisi, the Indian Lad.

FOR SCIENCE GROUPS

Field Museum and Its Work; Prehistoric Plants and Animals; Insects and Reptiles; Coal and Iron; Coffee, Chocolate and Tea; A Trip to Banana Land; Birds of the Chicago Region; Animal Life in the Chicago Region; Trees of the Chicago Region; Wild Flowers of the Chicago Region; Animals at Home; Our Outdoor Friends.

The total number of extension lectures given by the staff of the Raymond Foundation was 411, and the total attendance was 153,557.

ACCESSIONS—RAYMOND FOUNDATION

During the year the Raymond Foundation acquired, for use in the Theatre and in the extension lectures, 314 slides made by the Division of Photography. Of these 168 were colored by the Museum Illustrator.

The Foundation was also the recipient of 18,200 feet (21 reels) of motion picture film entitled *The Trail of the Olympian*, presented by the Chicago, Milwaukee, St. Paul and Pacific Railway.

LECTURE TOURS AND MEETINGS FOR ADULTS—RAYMOND FOUNDATION

Guide-lecture service was made available without charge, as in previous years, to clubs, conventions and other organizations, and to Museum visitors in general. During July and August, morning tours were given in addition to the regular afternoon ones. For the information of visitors, printed monthly schedules were placed at the main entrance, and were distributed through cooperating agencies such as libraries and other civic centers, not only in the city but also in the suburbs. The tours offered to the public during the year included 101 of a general nature, and 198 covering specific topics. These were taken advantage of by 289 groups, comprising 5,012 individuals. In addition to the regular public tours, there were special tours given to sixty-six groups from colleges, clubs and other organizations, and 1,770 persons attended these.

The James Simpson Theatre was used for two meetings. In May, 1,500 members of the Juvenile Council of the Cook County Schools held an all-day session; in June, the foreign-born adult commencement of the city schools was held with 696 in attendance. In January, the small lecture hall was used by a group of college students. Total attendance at the three meetings was 2,214.

SUMMARY OF ATTENDANCE AT ENTERTAINMENTS, LECTURES,
TOURS, ETC.—RAYMOND FOUNDATION

The total number of groups reached through the activities of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures was 1,429, and the aggregate attendance included in these groups numbered 219,321 individuals.

LECTURES FOR ADULTS

On Saturday afternoons during the spring and autumn months the Museum's sixty-third and sixty-fourth courses of free lectures for adults were given in the James Simpson Theatre. They were illus-

trated by motion pictures and stereopticon slides. Following are the programs of both series:

SIXTY-THIRD FREE LECTURE COURSE

- March 2—Birds, Bergs, and Kodiak Bears.
Dr. William Finley, Portland, Oregon.
- March 9—The New Valley of 10,000 Smokes.
Rev. Bernard R. Hubbard, S.J., University of Santa Clara, California.
- March 16—In the Shadow of the Eastern Gods.
Mr. Robert Edison Fulton, Jr., New York.
- March 23—Central American Trails.
Captain John D. Craig, Hollywood, California.
- March 30—Modern Pioneering.
Mr. Richard Finnie, F.R.G.S., Ottawa, Canada.
- April 6—Timbuktu and Beyond.
Mr. Rudyerd Boulton, Assistant Curator of Birds, Field Museum;
Leader of Straus-Field Museum West African Expedition.
- April 13—The West Indies.
Major James C. Sawders, Nutley, New Jersey.
- April 20—The Canadian Rockies in Picture and Story.
Mr. Dan McGowan, Banff, Canada.
- April 27—The Buried Cities of Ceylon.
Dr. Robert McMurry, New York.

SIXTY-FOURTH FREE LECTURE COURSE

- October 5—Animals of the Rocky Mountains.
Dr. Wendell Chapman, Berkeley, California.
- October 12—Our Fascinating Southwest.
Major James C. Sawders, Nutley, New Jersey.
- October 19—The Ethiopians and Their Stronghold.
Dr. Wilfred H. Osgood, Curator, Department of Zoology, Field Museum; Leader of the Field Museum-*Chicago Daily News* Ethiopian Expedition.
- October 26—From Egypt to the Cape of Good Hope.
Captain Carl von Hoffman, New York.
- November 2—The Second Byrd Antarctic Expedition.
Dr. Thomas C. Poulter, Mount Pleasant, Iowa; Second-in-Command of the Expedition.
- November 9—The Ethiopians and Their Stronghold (*repeated by request*).
Dr. Wilfred H. Osgood, Curator, Department of Zoology, Field Museum; Leader of the Field Museum-*Chicago Daily News* Ethiopian Expedition.
- November 16—Tibet—Forbidden Land of Magic and Mystery.
Mr. Harrison Forman, New York.
- November 23—Plants Without Soil and Other Miracles in Nature.
Mr. Arthur C. Pillsbury, Berkeley, California.
- November 30—Sails Over Ice.
Captain Robert A. Bartlett, New York.

The total attendance at these eighteen lectures was 24,336. Of these, 11,997 attended the spring course, and 12,339 the autumn course.

SUMMARY OF ATTENDANCE AT LECTURES, ETC.

The total number of groups receiving instruction or other services from the Museum during the year was 1,450, with an aggregate attendance of 245,871 individuals. These figures include the 1,429 groups and 219,321 individuals reached through the activities of the James Nelson and Anna Louise Raymond Foundation for Public School and Children's Lectures, as well as the 24,336 persons attending the adult lectures, and the 2,214 persons attending the meetings of outside organizations to which the use of the James Simpson Theatre and the small lecture hall was made available.

LIBRARY

Continued increase in the use of the Library of Field Museum by the general public was noted during 1935. This is due, no doubt, in part to the fact that it has become more widely known that a large number of the books which can be found here are not available elsewhere in the city.

An important development of the past year was the resumption of binding and repair of books. For several years, because of budget reductions, it has been necessary to neglect this work, and a large amount of it had accumulated. A good beginning was made on this task in 1935, the undertaking having been made possible chiefly by the fact that skilled bookbinders were assigned for employment in the Library by the Works Progress Administration of the federal government. A large number of books, many of which had reached a dilapidated condition, were repaired, and some of them rebound. Also, some series of back numbers of periodicals were bound. This has done much to lengthen the life and improve the appearance of the books, while the binding of the pamphlets not only protects them but at the same time makes them more readily handled and therefore more useful.

Also through the assistance rendered by WPA workers, a start was made on treating the leather bound books with oil, thus supplying much needed nourishment. Further, some 6,000 cards have been added to the catalogue by the WPA workers, and, in the earlier part of the year, by workers similarly assigned by the Illinois Emergency Relief Commission. Considerable work has also been done in mounting loose maps, thus not only preserving them, but making them easier to consult.

Three years ago a large reduction was made in the number of periodicals regularly received. Scientific periodicals are so necessary,

especially for consultation by the Staff, that this curtailment seriously hampered much work. Therefore the opportunity which came in 1935 to renew subscriptions to some of these was most welcome. With each renewal the numbers for the intervening years were secured so as to make the files complete. This, of course, added materially to the cost, but it also added greatly to the value of the various series. It has been possible, likewise, to purchase some of the newer books of importance in the Museum's fields, and all Departments have thus been strengthened. Two of the especial desiderata for the Edward E. Ayer Ornithological Library have been purchased: Miller, *Beiträge zur Ornithologie*, Part 1, *Afrika*, and Zander, *Naturgeschichte der Vögel Mecklenburgs*, Parts 1-8, 1837-1853. There has also been purchased the rare set of Velloso's *Flora fluminensis* in eleven volumes, a work written before 1790, although not published until 1825. It is an especially important work on the plants of the American tropics. Other purchases of the year include: McKenney and Hall, *History of the Indian Tribes of North America*, revised edition; Westlake, *American Designs*; Lamprecht, *Handbuch der Palaeornithologie*.

After the receipt of the late Dr. Berthold Laufer's private library, which he bequeathed to the Museum, additional space was necessary, and Room 120 across the hall to the north of the reading room was assigned to the Library. This additional space also made possible a rearrangement of the books in the General Library thus providing for continued growth during the next few years. The less crowded condition on the shelves thus accomplished improved the serviceability of the Library. The new room was freshly painted, thus making it bright and attractive, and the needed stacks were provided for books. One half has been devoted entirely to volumes about China, and to books and manuscripts in the Chinese, Tibetan, Mongolian, Manchu and Korean languages. These are being catalogued by Professor F. E. Wood, a volunteer worker who has had previous experience in similar projects for other libraries. Most of the so-called Old Mongolian texts, of which there are about thirty, are included in the Mongolian collection. The Tibetan collection contains some one hundred and twenty books. There is a comparatively small number of Manchu books in existence (about two hundred and fifty or so) and there are approximately thirty-five of these in this collection, of which some twenty-five are dictionaries. By far the largest part of the whole collection consists of books on China, including about 7,000 books in the Chinese language which have been

catalogued by Mr. Kenji Toda, whose employment was made possible by a gift of funds from the American Friends of China, Chicago. Among these books are fifteen collections on the subjects of literature, bibliography, philosophy, religion, history, geography, natural history, and the arts. The books on China in other languages are being catalogued as rapidly as possible, and many of them are already available for readers.

A most interesting and valuable feature of this collection is the extremely fine assortment of dictionaries, many of them of languages little known outside of the countries in which they are used. These will be found invaluable by many students. Among the dictionaries received are Chinese-English, Chinese-Russian, Chinese-French, Japanese-English, English-Burmese, Turk, and Indian dialects.

Mr. Stanley Field, President of the Museum, presented a collection of about one hundred rare, beautifully bound and valuable books, containing many old, out-of-print editions of accounts of the famous voyages made in the eighteenth and nineteenth centuries. Such books are almost invaluable for use in research work, and will always be highly treasured as source material. A few of the outstanding ones are: five volumes of the Hakluyt *Collections of the Early Voyages, 1809-1812*; Cook, *A Voyage Towards the South Pole and Round the World, 1772-1776* (second voyage), first edition, two volumes, 1777; Cook, *A Voyage to the Pacific Ocean, 1776-1780* (third voyage), first edition, three volumes, 1784; Cook, *Illustrations of Cook's Voyages, 1768-1780*; Anson, *Voyage Round the World in the Years 1743-1744*, fifth edition, 1749; Barrow, *Travels in China, 1804*; Bélanger, *Voyage aux Indes-Orientales par le Nord de l'Europe, Atlas, 1825-1829*; Beverly, *The History and Present State of Virginia*, first edition, 1705; Burney, *A Chronological History of the Voyages and Discoveries in the South Sea or Pacific Ocean*, five volumes, 1579-1764; Carver, *Travels Through the Interior Part of North America, 1803-17*, third edition; Dalrymple, *An Historical Collection of the Several Voyages and Discoveries in the South Pacific Ocean, 1770*; Dampier's *Voyages, 1729*; Esquemeling, *Buccaneers of America, 1684*; Hearne, *Journey from Prince of Wales's Fort in Hudson Bay to the Northern Ocean, 1795*; Hennepin, *A New Discovery of a Vast Country in America, 1698*; Kippis, *The Life of Captain James Cook*, first edition, 1788; Meares, *Voyages Made in the Years 1788 and 1789*, first edition, 1790; Ogilby, *America, Being the Latest and Most Accurate Description of the New World, 1671*; W. Smith, *An His-*

torical Account of the Expedition Against the Ohio Indians, 1765. Many of these have for years been among the Library's desiderata.

Mr. Carl Gronemann, the Museum Illustrator, designed distinctive bookplates for the two special collections received during this last year so that these books will be always distinguished from the rest of the Library. The one for the Laufer collection represents a scene typically Chinese in motif and art style, suggesting the outlook through a window over a desk which by its writing brushes, ink palette, scrolls and other objects subtly connotes the idea of an author's sanctum. The one for Mr. Stanley Field's collection has his family's coat of arms, bordered by the distinctive Ionic pillars of Field Museum.

Through the courtesy of Pratt Institute Library, Brooklyn, New York, most of the first thirty volumes of the *Illustrated London News* were received. These are a substantial contribution toward filling out the file of this frequently consulted periodical.

In addition to those mentioned above, other valuable gifts have been received, among which are the following: from Mr. Henry Field, Chicago, about twenty volumes together with current numbers of *Journal of Heredity* and publications of Palaeontographical Society; from Mr. Stanley Field, *Illustrated London News* and *Bird-lore*, current numbers; from Mr. Hsu Kwan-swen, Kiangsu, China, *Chinese Mirrors*; Khi-no, *Funeral Ceremony*; from Mr. A. E. S. Neumann, *Description of Patagonia, 1774* (reprint); from Dr. E. E. Sherff, topographical maps of Hawaii and various publications of much interest; from Director Stephen C. Simms, current numbers of *Museum News* published by the American Association of Museums, Seidenadel's *Language Spoken by the Bontoc Igorot*, and Hamilton's *Maori Art*; from Mr. Benjamin K. Smith, Rustafjaell's *Stone Age in Egypt*, and Bresadola's *I funghi mangerecci e velenosi*. Many others have donated their own publications and these are greatly appreciated.

The Museum has been fortunate in making some valuable exchanges with institutions and individuals in various parts of the world. Such exchanges are an important source of new publications for addition to the Library. The publications of the various scientific institutions are of great significance and value in a research library.

Again deserving of appreciative acknowledgment is the courtesy of other libraries in lending books which were desired by the members of the Staff to assist in their research work. Especially should be

mentioned the John Crerar Library, Chicago; the University of Chicago Library; the Library of Congress and that of the United States Department of Agriculture, in Washington, D. C.; the Library of The American Museum of Natural History, New York; Harvard University Library, and the Museum of Comparative Zoology of Harvard College, Cambridge, Massachusetts; the Library of the Arnold Arboretum, Jamaica Plain, Massachusetts; University of Michigan Library at Ann Arbor; University of Illinois Library, Urbana, Illinois; and the Library of the Philadelphia Academy of Natural Sciences.

DIVISION OF PRINTING

An exceptionally large amount of work on Museum publications was handled by the Division of Printing during 1935. This heavy production was facilitated by the fact that, in addition to the regular force of the Division, there were compositors, monotype operators, pressmen, binders, assistants in proofreading, and other helpers furnished during the greater part of the year by the Illinois Emergency Relief Commission and the federal Works Progress Administration. The number of these helpers varied at different periods, ranging from five to twenty-five.

In the regular Museum publication series there were issued fifteen new numbers requiring an aggregate of 992 pages of type composition. Of these, 16,876 copies were printed. Seven of these publications were in the Zoological Series, six in the Geological Series, one in the Anthropological Series, and one was the *Annual Report of the Director* for 1934. In addition, 790 copies were printed of a 24-page index for Volume XVIII of the Zoological Series. Miscellaneous additional publications include a revised edition of 10,069 copies of the *General Guide* (44 pages); a revised edition of the *Handbook of Field Museum* (68 pages) in which 3,084 copies were printed; and an additional volume, quarto size, in the Museum's Anthropological Memoirs Series, this last being a 474-page book of which 698 copies were produced.

The total number of exhibition labels printed for all Departments of the Museum was 11,436. Other miscellaneous work brought the total number of impressions for the year to an aggregate of 353,341.

Following is a detailed list of the publications:

PUBLICATION SERIES

- 335.—Zoological Series, Vol. XVIII, No. 12. New Fishes Obtained by the Crane Pacific Expedition. By Albert W. Herre. February 15, 1935. 58 pages, 3 zinc etchings. Edition 749.

368 FIELD MUSEUM OF NATURAL HISTORY—REPORTS, VOL. X

- 336.—Report Series, Vol. X, No. 2. Annual Report of the Director for the Year 1934. January, 1935. 144 pages, 12 photogravures. Edition 5,550.
- 337.—Zoological Series, Vol. XX, No. 8. A New Crocodile from the Philippine Islands. By Karl P. Schmidt. May 15, 1935. 4 pages, 1 text figure. Edition 807.
- 338.—Zoological Series, Vol. XX, No. 9. Notes on the Breeding Behavior of Lizards. By Karl P. Schmidt. May 15, 1935. 6 pages, 3 text figures. Edition 829.
- 339.—Zoological Series, Vol. XX, No. 10. A New Skink from Mexico. By Edward H. Taylor. May 15, 1935. 4 pages, 1 text figure. Edition 838.
- 340.—Zoological Series, Vol. XX, No. 11. New Mammals from Guatemala and Honduras. By Colin C. Sanborn. May 15, 1935. 6 pages. Edition 846.
- 341.—Geological Series, Vol. VI, No. 9. A New Silurian Phyllopodous Crustacean. By Sharat K. Roy. May 15, 1935. 6 pages, 1 text figure. Edition 839.
- 342.—Geological Series, Vol. VI, No. 10. A New Niagaran Conularia. By Sharat K. Roy. May 15, 1935. 8 pages, 3 text figures. Edition 835.
- 343.—Geological Series, Vol. VI, No. 11. Description of a Silurian Phyllopod Mandible with Related Notes. By Sharat K. Roy. May 15, 1935. 6 pages, 1 text figure. Edition 849.
- 344.—Geological Series, Vol. VI, No. 12. A New *Argyrohippus* from the Deseado Beds of Patagonia. By Bryan Patterson. May 15, 1935. 6 pages, 2 text figures. Edition 845.
- 345.—Zoological Series, Vol. XX, No. 12. A New Generic and Family Position for *Bufo borbonica*. By D. Dwight Davis. May 15, 1935. 6 pages, 1 text figure. Edition 858.
- 346.—Anthropological Series, Vol. XXI, No. 3. Culture Areas of Nigeria. By Wilfrid D. Hambly. June 14, 1935. 140 pages, 68 photogravures, 1 map. Edition 665.
- 347.—Zoological Series, Vol. XIII, Part VIII. Catalogue of Birds of the Americas. By Charles E. Hellmayr. September 16, 1935. 542 pages. Edition 790.
- 348.—Geological Series, Vol. VI, No. 13. A Skeleton of *Astrapotherium*. By Elmer S. Riggs. October 30, 1935. 12 pages, 1 photogravure, 3 zinc etchings. Edition 798.
- 349.—Geological Series, Vol. VI, No. 14. The Question of Living Bacteria in Stony Meteorites. By Sharat K. Roy, with preface by N. Paul Hudson. December 5, 1935. 20 pages, 4 text figures. Edition 793.
- Zoological Series. Index for Vol. XVIII. September 16, 1935. 24 pages. Edition 790.

MEMOIR SERIES

- Anthropology, Vol. IV. Arabs of Central Iraq—Their History, Ethnology, and Physical Characters. By Henry Field, with introduction by Sir Arthur Keith. 1935. 474 pages, 156 photogravures, 48 text figures, 3 maps. Edition 698.

GUIDE SERIES

- General Guide to Exhibits of Field Museum. Seventeenth edition. 1935. 42 pages, 3 zinc etchings, 1 photogravure (cover). Edition 10,069.

HANDBOOK SERIES

- Handbook. General information concerning the Museum, its history, building, exhibits, expeditions and activities. Fifth edition. July, 1935. 68 pages, 8 halftones. Edition 3,084.

DIVISIONS OF PHOTOGRAPHY AND ILLUSTRATION

A total of 35,105 negatives, prints, photographic enlargements, lantern slides, transparent exhibition labels, etc., was produced in the Division of Photography. While the majority of these were

for the use of the Museum's various Departments and Divisions, this number includes also 329 prints and enlargements and 74 stereopticon slides made for sale on orders received from the public.

The Division has had the assistance through the greater part of the year of from four to five relief workers assigned by the Illinois Emergency Relief Commission and the federal Works Progress Administration. Three of these were professional photographers, who were responsible for producing 22,010 of a total of 32,000 prints made during the year, the balance being made by the regular staff of the Division. All those made by the relief workers were prints of type specimens of plants for the Herbarium, from negatives received from Assistant Curator J. Francis Macbride, who is in Europe on a special assignment for the Department of Botany. The other relief workers performed very important clerical work, principally in connection with the cataloguing of the enormous negative collection, now numbering more than 85,000 negatives. About 7,550 index cards were written and filed in this work, and approximately the same number of negatives and jackets were also numbered and filed correspondingly. Labeling and refiling involved about 35,000 operations, and various other routine tasks were handled.

Because of reduced needs for photogravure work during 1935 as compared with recent years, the total number of prints produced for the illustration of publications and leaflets, headings of posters, covers of various published works, and picture post cards was only 194,750. In 1934 the number was 578,820. However, the staff of the Division of Photogravure was fully occupied, approximately half of the working time during the year being devoted to type composition work in the Division of Printing.

The Museum Illustrator performed a wide variety of work, completing 795 orders to fulfill needs of the institution's various Departments and Divisions. These included 381 drawings, the coloring of 225 lantern slides, and miscellaneous items involving lettering, retouching, map-making, etc. A task of unusual dimensions was that of retouching features of the large model of the moon exhibited in Clarence Buckingham Hall (Hall 35).

DIVISION OF PUBLICATIONS

Continuing the generous distribution of its publications among the institutions with which exchange relations are maintained, Field Museum extended this far-reaching means of disseminating the

research writings of its scientific staff by adding twenty-one new names to the lists for these exchanges.

During the last year 10,591 copies of scientific publications and 168 of leaflets were sent to the libraries, institutions, and scientists on the Museum mailing lists; also, 3,882 copies of the *Annual Report of the Director* for the year 1934 were sent to Members of the Museum. Sales for the year totaled 1,683 scientific publications, 7,119 leaflets, and 8,405 miscellaneous publications and pamphlets such as guides, handbooks, and memoirs.

Twelve large boxes containing 1,837 individually addressed packages of publications were shipped to Washington, D.C., for distribution in foreign countries through the exchange bureau of the Smithsonian Institution; and grateful acknowledgment is made of that institution's courtesy and cooperation.

For future sales and other distributions, 20,901 copies of the various publications issued during 1935 were wrapped in 321 packages, labeled, and stored in the stock room.

Reprints, issued late in 1934, of two leaflets, semi-popular in character, were placed on sale in 1935. They are *Neanderthal (Mousterian) Man* and *The Truth about Snake Stories*, the first editions of which were published in 1929.

The leaflets *The Races of Mankind* and *Prehistoric Man* continued to be much in demand, about 800 copies of each having been sold in this, their third, year.

Sales totaling more than 1,000 copies were made of several books issued by outside publishers and handled by the Museum on consignment. They pertain to natural history, are written in popular style, and the authors of some of them are members of the Museum Staff.

General clerical service of value to the Division was received during the year from one helper assigned by the Illinois Emergency Relief Commission during most of the period from January to September, and by the federal Works Progress Administration from the middle of October to the end of the year. To some extent these services were shared by the Division of Public Relations.

POST CARDS

The total number of picture post cards sold during 1935 was 72,300. Of these, 16,929 were grouped into 1,161 of the packaged sets which are prepared for the convenience of the public. This total represents a decrease in the volume of sales of both individual

cards and sets of cards, undoubtedly attributable to the decrease in attendance.

Six zoological views were added to the individual post card assortment.

DIVISION OF PUBLIC RELATIONS

Continuation of the Museum's regular publicity campaign, in which information is dispatched several times a week to the daily press, resulted, as in other years, in bringing public attention to the institution's activities through the columns of the newspapers of Chicago and elsewhere.

Cordial cooperation was extended to the Museum not only by the newspapers but also by the news distributing agencies which serve the press nationally and internationally. Space was given not only to news from the Museum, but also to feature stories of a nature consistent with the institution's primary aim of spreading and interpreting scientific knowledge to the largest possible number of persons.

Through the Division of Public Relations, press releases averaging five a week, have been prepared and distributed to the newspapers, news services, radio stations, and other publicity channels. In addition to these articles, many photographs of Museum exhibits were published both in Chicago and in the papers of other cities throughout the United States. The more important articles and pictures frequently appeared also in foreign publications. As in past years, editors often assigned members of their own staffs to prepare special articles and pictures by means of which the Museum received additional publicity, while laudatory comments on the value of the work done by the Museum occasionally appeared in editorial columns as well as on news pages.

The monthly bulletin, *Field Museum News*, completed its sixth year and volume of publication. The distribution schedule has been maintained on a basis to assure its delivery to all Members of the Museum promptly at the beginning of each month. In each issue the aim has been to include diversified articles and pictures which would be of interest to all of the several thousand readers. Besides its distribution to Members, the *News* is circulated to other scientific institutions as an exchange, and to newspapers and magazines which by quoting or reprinting articles from it thus increase the general publicity received by the Museum.

Gratitude is due to various organizations which continued in 1935, as in past years, to place various advertising media at the disposal of the Museum without charge. Through the courtesy of

the Illinois Central System and the Chicago and North Western Railway, the Museum was again permitted to display placards at city and suburban stations announcing the spring and autumn lecture courses. Lecture posters appeared likewise in schools, libraries, department stores, hotels, clubs, and other public places through the courtesy of the various authorities in charge of these. Folders containing information about the Museum were distributed through many of these same organizations, and also through local, interurban and interstate transportation companies. Radio stations and broadcasting networks also have cooperated by giving notice to the Museum and its activities.

In addition to newspaper publicity and *Field Museum News*, the Division of Public Relations was responsible for editorial functions in connection with certain of the Museum's published matter, and for the preparation of various special reports and articles either for internal use or outside publication in magazines and books, as well as for a large volume of correspondence and other detail. Invitations to visit the Museum, and descriptive folders, were sent to the chairmen of nearly 400 conventions held in Chicago.

The Division has received, jointly with the Division of Publications, clerical services from one relief worker, assigned in the earlier part of the year by the Illinois Emergency Relief Commission, and later by the federal Works Progress Administration.

For the third year the Consolidated Press Clipping Bureaus of Chicago generously furnished the Museum with a limited press clipping service for which no charge was made, and to them grateful acknowledgment is herewith made.

DIVISION OF MEMBERSHIPS

The total number of Museum memberships on record as of December 31, 1935, was 4,143, as compared with 4,142 at the end of 1934. While this would seem to represent a static condition, it is actually significant of great improvement since it makes 1935 the first year since 1930 to end without a loss in membership. Declines ranging from 57 in 1934 to as high as 819 in 1932 had occurred in each of the four preceding years. This would seem to justify a hope that 1936 may bring the beginning of an increase in the number of Museum Members.

Most gratifying is this evidence of the loyal support of the institution by its Members, and an expression of appreciation is due to all who have continued their association with the Museum.

To all those Members who found it necessary to resign in recent years, an earnest invitation to renew their memberships stands at all times.

The following tabulation shows the number of names on the list in each of the Museum's membership classifications at the end of 1935:

Benefactors.....	18
Honorary Members.....	17
Patrons.....	30
Corresponding Members.....	7
Contributors.....	111
Corporate Members.....	46
Life Members.....	298
Non-Resident Life Members.....	10
Associate Members.....	2,422
Non-Resident Associate Members.....	4
Sustaining Members.....	11
Annual Members.....	1,169
Total Memberships.....	4,143

The names of all persons listed as Members during 1935 will be found at the end of this book.

Valuable clerical services were rendered in the Division by a helper assigned, first by the Illinois Emergency Relief Commission, and in the later months by the federal Works Progress Administration.

CAFETERIA

Meals or refreshments were served to a total of 98,643 persons in the lunch rooms of the Museum during 1935. Those patronizing the main cafeteria numbered 69,011, and those using the children's room 29,632. These figures show reductions from those reached in 1934, but such decreases were to be expected in view of the smaller attendance at the Museum.

In the pages which follow are submitted the Museum's financial statements, lists of accessions, names of Members, *et cetera*.

STEPHEN C. SIMMS, *Director*

COMPARATIVE ATTENDANCE STATISTICS
AND DOOR RECEIPTS
FOR YEARS 1934 AND 1935

	1935		1934
Total attendance.....	1,182,349		1,991,469
Paid attendance.....	54,631		99,553
Free admissions on pay days:			
Students.....	19,478		19,870
School children.....	67,514		54,712
Teachers.....	2,016		1,139
Members.....	1,080		1,208
Admissions on free days:			
Thursdays (52).....	190,580	(52)	523,580
Saturdays (52).....	385,159	(52)	603,953
Sundays (52).....	461,891	(52)	687,454
Highest attendance (Sept. 1).....	22,305	(Sept. 2)	55,458
Lowest attendance (Jan. 22).....	61	(Dec. 21)	56
Highest paid attendance (Sept. 2).....	2,842	(Sept. 3)	3,946
Average daily admissions (365 days).....	3,239	(365 days)	5,456
Average paid admissions (209 days).....	261	(209 days)	476
Number of guides sold.....	4,814		4,706
Number of articles checked.....	14,853		37,310
Number of picture post cards sold.....	72,300		107,842
Sales of publications, leaflets, handbooks, portfolios, and photographs.....	\$4,079.94		\$4,209.48

COMPARATIVE FINANCIAL STATEMENTS

FOR YEARS 1934 AND 1935

INCOME		1935	1934
Endowment Funds.....		\$173,834.39	\$173,059.17
Funds held under annuity agree- ments.....		36,724.36	38,349.29
Life Membership Fund.....		12,878.81	13,031.56
Associate Membership Fund...		12,132.13	12,669.33
Chicago Park District.....		140,838.65	101,226.19
Annual and Sustaining Member- ships.....		10,149.00	10,061.00
Admissions.....		13,657.75	24,888.25
Sundry receipts.....		16,909.10	29,439.45
Contributions, general purposes.			28,467.95
Contributions, special purposes (expended <i>per contra</i>).....		13,530.00	43,718.83
Special funds: Part expended this year for purposes desig- nated (included <i>per contra</i>)		18,138.76	16,041.03
		<u>\$448,792.95</u>	<u>\$491,002.05</u>
EXPENDITURES			
Collections.....	\$	56,395.67	\$ 70,220.98
Expeditions.....		561.84	24,662.30
Furniture, fixtures, etc.....		12,321.25	6,389.04
Pensions, group insurance.....		15,418.36	17,320.90
Departmental expenses.....		32,680.82	31,763.13
General operating expenses.....		263,850.29	280,522.79
Annuities on contingent gifts...		36,205.39	36,305.69
Added to principal of annuity endowments.....		518.97	2,043.60
Interest on loans.....		3,930.93	4,258.29
Paid on bank loans.....			10,000.00
		<u>\$421,883.52</u>	<u>\$483,486.72</u>
Balance.....		<u>\$ 26,909.43</u>	<u>\$ 7,515.33</u>
Notes payable January 1.....	\$	95,000.00	\$105,000.00
Paid on account.....			10,000.00
Balance payable December 31.....	\$	95,000.00	\$ 95,000.00

THE N. W. HARRIS PUBLIC SCHOOL EXTENSION

	1935	1934
Income from Endowment.....	\$15,684.04	\$19,427.71
Operating expenses.....	17,590.04	17,654.81
December 31.....	Deficit \$ 1,906.00	Balance \$ 1,772.90

LIST OF ACCESSIONS

DEPARTMENT OF ANTHROPOLOGY

AMERICAN INSTITUTE FOR PERSIAN ART AND ARCHAEOLOGY, New York: 1 pottery jar, 6 Sasanian pottery figurines and 1 pottery head—Kish, Iraq (gift).

ANDRAU, DR. E. W., Houston, Texas: 2 basalt blocks with Safaitic inscriptions—north of Qasr Burqu', Trans-Jordan (gift).

ANONYMOUS (through H. S. Mori, Chicago): 1 mortuary clay dancing figure, hand decorated, T'ang dynasty (A.D. 618-907)—China (gift).

BELDEN, JOSEPH C., Chicago: 1 shrunken human head—Jivaro, Ecuador (gift).

BERKSON, MR. and MRS. MAURICE, Highland Park, Illinois: 1 tom-tom, 1 pair of stirring-spoons, 1 child's bench, 1 clothes paddle, 1 hair comb, 1 hat, and 1 case—Djukas, Paramaribo, Surinam Province, Dutch Guiana (gift).

BREUIL, ABBÉ HENRI, and PÈRE DE CHARDIN, Paris, France: 282 quartzite, flint, and obsidian implements—Porcupine Cave near Dire Dawa, Ethiopia (gift).

BURR, DR. E. E., Chicago: 2 colored anatomical models of a human head dissected to show muscles, and structures of bones (gift).

FIELD, HENRY, Chicago: 1 rabeyba; 33 ethnological objects including wooden ladles, pipes, tongs, tea strainers, flutes, toys, shoes, etc.—Kurdistan; 7 Nestorian ethnological objects—Tell Naif; 20 ethnological objects including fishing equipment, baskets, bags, etc.—Marsh Arabs; 12 ethnological objects, and 1 bottle of brown kohl and 1 of black—Syria; 6 basalt blocks with Safaitic inscriptions—near Station H-5, Iraq Petroleum Company, Trans-Jordan (gift).

GLADWIN, HAROLD S., Gila Pueblo, Globe, Arizona: about 36 potsheards illustrating Cibola branch of pottery classification as worked out by Mr. Gladwin—Arizona and New Mexico (gift); 13 pieces of prehistoric pueblo pottery—Arizona and New Mexico (exchange).

GROSSMAN, E. C., Chicago: 2 shrunken human heads, male and female—Lima, Peru (gift).

INSTITUTE FOR HISTORY OF MATERIAL CULTURES, UKRAINIAN ACADEMY OF SCIENCES, Kiev, Ukraine, Union of Soviet Socialistic Republics: 131 paleolithic implements—Ukraine, U.S.S.R. (exchange).

KEEP, CHAUNCEY, ESTATE OF, Chicago: bronze head of a Beduin (gift).

LARIMER, MRS. ROBERT S., Evanston, Illinois: 1 puppet-doll, probably of Hopi Indians—southwestern United States (gift).

MARTIN, MISS JULIA T., Chicago: 1 small grass basket—Sitka, Alaska; 1 birch bark needle case—Ojibway camp near Grand Rapids, Michigan (gift).

MORRIS, EARL H., Boulder, Colorado: 9 pieces of prehistoric pottery—near mouth of La Plata River, New Mexico (exchange).

MUSEES ROYAUX D'ART ET D'HISTOIRE, Brussels, Belgium: 7 masks, 2 statuettes, 4 mats and 4 combs from Bakuba, Bassonge, Bafende, etc., tribes—southwest Congo, Africa (exchange).

RIDDELL, L. H., El Castillo, Arcos de la Frontera, Spain: 6 mounted prints of reconstructed prehistoric scenes drawn by Mr. Riddell—Upper Paleolithic and Neolithic, Pyrenees district and southwestern France (gift).

ROBBINS, MISS ALICE B., Chicago: 1 lady's coat, late Ch'ng dynasty—China (gift).

SAN DIEGO MUSEUM (collected by Malcolm J. Rogers), San Diego, California: 53 stone artifacts representing Pacific Coast cultures—San Diego region, California (exchange).

STATE MUSEUM OF ANTHROPOLOGY, Moscow, Union of Soviet Socialistic Republics: 2 skulls—U.S.S.R. (?) (gift).

WALTER, ELLERY, ESTATE OF, Chicago: 1 bamboo quiver with bow, 2 trident fish-spears, and 5 long-shafted arrows—southeastern Asia (?) (gift).

DEPARTMENT OF BOTANY—ACCESSIONS

ACADEMY OF NATURAL SCIENCES, Philadelphia, Pennsylvania: 398 specimens of plants (exchange).

AELLEN, DR. PAUL, Basel, Switzerland: 410 specimens of European plants (exchange).

ARMSTRONG CORK COMPANY, Lancaster, Pennsylvania: 10 samples of cork, 1 photograph (gift).

ARNOLD ARBORETUM, Jamaica Plain, Massachusetts: 699 specimens of plants (exchange).

BAEHNI, DR. CHARLES, Geneva, Switzerland: 5 plant specimens (gift).

BAILEY, DR. LIBERTY H., Ithaca, New York: 105 photographs (exchange).

BEBB, HERBERT, Chicago: 3 plant specimens (gift).

BENKE, HERMANN C., Chicago: 216 specimens of plants; cut and photograph of Kentucky coffee tree (gift).

BOAL, MISS ESTHER, Gary, Indiana: 1 photograph (gift).

BRACELIN, MRS. H. P., Berkeley, California: 9 specimens of California plants (gift).

BRAVO H., PROFESSOR HELIA, Mexico City, Mexico: 1 plant specimen (gift).

BUCKNER, FRANKLIN, Bluffton, Indiana: 1 plant specimen (gift).

BUHL, CARL, JR., Chicago: 897 specimens of plants (gift).

CABRERA, PROFESSOR ANGEL L., La Plata, Argentina: 21 plant specimens (exchange).

CALDERON, DR. SALVADOR, San Salvador, Salvador: 5 plant specimens (gift).

CALIFORNIA ACADEMY OF SCIENCES, San Francisco, California: 224 specimens of plants (exchange).

CÁRDENAS, DR. MARTÍN, Potosí, Bolivia: 300 specimens of plants (gift).

CARNEGIE INSTITUTION OF WASHINGTON, D.C., station at Stanford University, California: 87 specimens of plants (exchange).

CATHOLIC UNIVERSITY OF AMERICA, Washington, D.C.: 211 specimens of plants (exchange).

CHAMBERLAIN, PROFESSOR CHARLES J., Chicago: 1 photograph (gift).

CHAPMAN, DR. FRANK M., Frijoles, Canal Zone: 1 plant specimen (gift).

CHERMONT, DR. BENTO, Belem, Para, Brazil: 1 plant specimen (gift).

CHRISTOPHERSON, DR. ERLING, Oslo, Norway: 2 plant specimens (gift).

CHRYSLER, PROFESSOR MINTIN A., New Brunswick, New Jersey: 5 plant specimens (gift).

CLOKEY, IRA W., South Pasadena, California: 225 plant specimens (exchange).

CONSERVATOIRE BOTANIQUE, Geneva, Switzerland: 2,110 specimens of plants (exchange).

CORNELL UNIVERSITY, DEPARTMENT OF BOTANY, Ithaca, New York: 86 plant specimens (exchange).

DAHLGREN, DR. B. E., Chicago: 1 plant specimen (gift).

DAVIS, MRS. O. W., Los Angeles, California: 1 plant specimen (gift).

DEAM, CHARLES C., Bluffton, Indiana: 7 plant specimens (gift).

DEPARTMENT OF AGRICULTURE, Pretoria, South Africa: 50 specimens of plants (exchange).

DE PAUW UNIVERSITY, Greencastle, Indiana: 223 plant specimens (exchange).

DOOLITTLE, MRS. HAROLD M., Okemos, Michigan: 1 plant specimen (gift).

DUCKE, DR. ADOLFO, Rio de Janeiro, Brazil: 48 plant specimens (gift).

DUGAND G., ARMANDO, Barranquilla, Colombia: 1 plant specimen (gift).

DURHAM, O. C., Chicago: 2 plant specimens (gift).

EASTMAN-GARDINER HARDWOOD COMPANY, Laurel, Mississippi: 2 boards of sycamore (gift).

EIFRIG, PROFESSOR G., River Forest, Illinois: 152 plant specimens (gift).

ELIAS, REV. BROTHER, Barranquilla, Colombia: 115 plant specimens (gift).

ELLIS, MISS CHARLOTTE C., Denver, Colorado: 1 plant specimen (gift).

378 FIELD MUSEUM OF NATURAL HISTORY—REPORTS, VOL. X

ELSON, MRS. E. D., Las Esperanzas, Coahuila, Mexico: 1 plant specimen (gift).

FIELD, HENRY, Chicago: 250 specimens of plants (gift).

FIELD COMPANY, WALTER, Chicago: 1 specimen of lace bark (gift).

FIELD MUSEUM OF NATURAL HISTORY:

Collected by Karl P. Schmidt (Leon Mandel Guatemala Expedition of Field Museum): 28 plant specimens.

Transferred from the Division of Photography: 6,113 photographic prints.

Purchases: 300 plant specimens—Peru; 80 specimens of plants—Venezuela; 966 specimens of plants—Brazil.

FISHER, GEORGE L., Houston, Texas: 89 plant specimens (gift); 168 plant specimens (exchange).

FLORES, DR. ROMÁN S., Progreso, Yucatan, Mexico: 44 plant specimens, 6 wood samples, 2 photographs (gift).

FLORIST'S PUBLISHING COMPANY, Chicago: 3 specimens of plants (gift).

FORRER, H., Chicago: 7 plant specimens (gift).

FRITZ, PROFESSOR EMANUEL, Berkeley, California: 6 range maps of western trees; 1 bundle of miniature shingles (gift).

GARRETT, PROFESSOR ARTHUR O., Salt Lake City, Utah: 175 plant specimens (gift).

GENTRY, HOWARD SCOTT, Westmoreland, California: 500 specimens of plants (gift).

GARFIELD PARK CONSERVATORY, Chicago: 8 plant specimens (gift).

GRAHAM, DR. V. O., Chicago: 1 plant specimen (gift).

GRAVES, PROFESSOR G. W., Fresno, California: Araucaria cones (gift).

GRAY HERBARIUM, Cambridge, Massachusetts: 150 specimens of plants, 101 photographic prints (exchange).

GREEN, BURDETT, Chicago: 1 plant specimen (gift).

GRONEMANN, CARL F., Elgin, Illinois: 1 plant specimen (gift).

GUERRA, J. GUTIERREZ, New York: plant bulbs (gift).

HAUBERG, MISS CATHERINE D., Rock Island, Illinois: 5 specimens of plants (gift).

HAYNIE, MISS NELLIE V., Oak Park, Illinois: 3 plant specimens (gift).

HERMANN, PROFESSOR F. J., Ann Arbor, Michigan: 266 plant specimens (gift); 60 plant specimens (exchange).

HERZFELD, PROFESSOR ERNST, Persepolis, Iran: 85 herbarium specimens (gift).

HEWETSON, WILLIAM T., Freeport, Illinois: 18 plant specimens; 1 water color painting (gift).

HOOVER, BRUCE L., Chicago: 21 panels of Mexican hardwoods (gift).

HULL, EDWIN D., Gary, Indiana: 1 plant specimen (gift).

HUTCHINSON, MRS. C. L., Lake Geneva, Wisconsin: 1 plant specimen (gift).

HYERS, MISS MABEL, Chicago: 1 plant specimen (gift).

INSTITUTO DE BIOLOGIA, Mexico City, Mexico: 2 plant specimens (gift).

IRAQ PETROLEUM COMPANY, LTD., Haifa, Palestine: 102 plant specimens (gift).

JACCARD, PROFESSOR PAUL, Zurich, Switzerland: 22 samples of European woods (exchange).

JOHNSON, S. C. AND SONS, INC., Racine, Wisconsin: 375 plant specimens.

KIRSCH, MYRON R., Chicago: 1 plant specimen (gift).

KRUKOFF, B. A., New York: 25 samples of fruits (gift).

LANKESTER, C. H., Cartago, Costa Rica: 4 plant specimens (gift).

LAWRANCE, ALEXANDER E., Bogota, Colombia: 28 plant specimens (gift).

LAZAR, YUSUP, Bagdad, Iraq: 575 specimens of plants (gift).

MEXIA, MRS. YNES, Berkeley, California: 117 specimens of plants (gift).

MILLE, REV. FATHER LUIS, Guayaquil, Ecuador: 10 plant specimens (gift).

MOORE, O. G., Brownsboro, Alabama: 1 specimen of blue poplar (gift).

MUSEO ARGENTINO DE CIENCIAS NATURALES, Buenos Aires, Argentina: 15 specimens of plants (exchange).

MUSEO DE LA PLATA, La Plata, Argentina: 65 specimens of plants (exchange).

MUSEO NACIONAL, San José, Costa Rica: 1 plant specimen (gift).

MUSEUM OF SCIENCE AND INDUSTRY, Chicago: 15 wood samples (gift).

NATURHISTORISKA RIKSMUSEET, Stockholm, Sweden: 490 plant specimens (exchange).

NEW YORK BOTANICAL GARDEN, Bronx Park, New York: 2,953 specimens of plants (exchange).

ORTEGA, JESÚS G., Mazátlan, Mexico: 5 plant specimens (gift).

OSTERHOUT, GEORGE E., Windsor, Colorado: 1 plant specimen (gift).

PARENTE, DR. ESMERINO GOMES, Fortaleza, Ceará, Brazil: 33 plant specimens.

PARODI, DR. LORENZO R., Buenos Aires, Argentina: 19 specimens of plants (gift).

PEATTIE, DONALD C., Chicago: 657 specimens of plants (gift).

POTLATCH FORESTS, INC., Potlatch, Idaho: 2 specimens of Idaho white pine (gift).

PURPUS, DR. C. A., Zacuapam, Mexico: 68 plant specimens (gift).

RHOADES, WILLIAM, Indianapolis, Indiana: 26 specimens of plants (gift).

ROBINSON, E. R., Chicago: 1 plant specimen (gift).

ROYAL BOTANIC GARDENS, Kew, Surrey, England: 305 specimens of plants (exchange).

RUSTAM EXPERIMENTAL FARM, Bagdad, Iraq: 15 plant specimens (gift).

SCHIPP, WILLIAM A., Belize, British Honduras: 77 plant specimens (gift).

SCHMOLL, DR. HAZEL, Chicago: 15 specimens of Colorado plants (gift).

SHERFF, DR. EARL E., Chicago: 185 plant specimens (gift).

SMITH, MRS. R. K., Pyengyang, Chosen: 82 plant specimens (gift).

SOSA, H. D., Panama City, Panama: 4 plant specimens (gift).

STANDLEY, PAUL C., Chicago: 20 plant specimens (gift).

STANFORD UNIVERSITY, LELAND, (Dudley Herbarium), California: 596 specimens of plants (exchange).

SUMMERHAYS, W. A., Memphis, Tennessee: 1 pine board (gift).

THROP, RALPH, Greensburg, Indiana: nuts of peanut walnut (gift).

TRYON, R. M., JR., Chicago: 41 specimens of Indiana plants (gift).

UNITED STATES DEPARTMENT OF AGRICULTURE, station at Oroville, California: branches of cork oak (gift).

UNITED STATES DEPARTMENT OF AGRICULTURE, DIVISION OF MYCOLOGY, Washington, D.C.: 1 photograph (gift).

UNITED STATES NATIONAL MUSEUM, Washington, D.C.: 248 plant specimens (exchange).

UNIVERSITY OF CALIFORNIA, DEPARTMENT OF BOTANY, Berkeley, California: 395 plant specimens (exchange).

UNIVERSITY OF MICHIGAN, DEPARTMENT OF BOTANY, Ann Arbor, Michigan: 469 plant specimens (exchange).

UNIVERSITY OF PENNSYLVANIA, DEPARTMENT OF BOTANY, Philadelphia: 255 plant specimens (exchange).

UNIVERSITY OF WISCONSIN, DEPARTMENT OF BOTANY, Madison, Wisconsin: 84 specimens of plants (exchange).

VALERIO, PROFESSOR MANUEL, San José, Costa Rica: 416 specimens of plants (gift).

WILKINS, MISS RUTH C., Michigan City, Indiana: 1 plant specimen (gift).

WILLIAMS, LLEWELYN, Chicago: 2 plant specimens (gift).

WISCONSIN LAND AND LUMBER COMPANY, Hermansville, Michigan: 1 tamarack board (gift).

WORTHINGTON, DR. H. C., Oak Forest, Illinois: 1 plant specimen (gift).

YALE UNIVERSITY, SCHOOL OF FORESTRY, New Haven, Connecticut: 1 wood, 542 plant specimens (gift).

YOE, PAUL J., and RALPH R. THOMAS, Mount Morris, Illinois: 1 fungus specimen (gift).

ZETEK, JAMES, Balboa, Canal Zone: 22 plant specimens (gift).

ZINGG, ROBERT M., Chicago: 21 plant specimens (gift).

DEPARTMENT OF GEOLOGY—ACCESSIONS

ACKERMAN, CHARLES N., Chicago: 2 specimens fossil cones; 1 specimen vivianite on clay—Grass Lake, Illinois (gift).

AMERICAN DOUCIL COMPANY, Philadelphia, Pennsylvania: 2 specimens doucil (gift).

AMERICAN MUSEUM OF NATURAL HISTORY, New York: Skull and jaw of *Megalocrinus rodens*—Ciego Montero, Cuba (exchange).

ANDREWS, ANDREW, Lake Louise, Alberta, Canada: 1 specimen zinc-lead-silver ore—Field, British Columbia (gift).

BRYANT, EDWARD R., Princeton, Illinois: 1 pseudo-meteorite—Princeton, Illinois (gift).

EDWARDS, STAFFORD C., Colton, California: 3 concretions—Signal Mountain, Salton Sink, California (gift).

FABER, EDWIN B., Grand Junction, Colorado: 1 Uintathere tooth—Palisade, Colorado (gift).

FIELD MUSEUM OF NATURAL HISTORY:

Collected by Henry Field (Field Museum Anthropological Expedition to the Near East, 1934): 939 specimens rocks and minerals; 190 specimens invertebrate fossils—Iraq and Trans-Jordan.

Collected by Julius Friesser (Hancock-Wegeforth Expedition to Guadalupe): 4 specimens rocks—Guadalupe.

Collected by Henry W. Nichols: 2 specimens botryoidal sulphur on tufa—Alberta, Canada.

Collected by Sharat K. Roy (Rawson-MacMillan Subarctic Expedition of Field Museum, 1927-28): 88 specimens rocks; 15 specimens ores—Newfoundland and Labrador.

FIELD, STANLEY, Chicago: 1 specimen glauconite—New Jersey (gift).

GARNER, KENNETH, San Bernardino, California: 2 spiral concretions—Imperial Valley, California; 5 photographs of concretions (gift).

GRAVES, PROFESSOR G. W., Fresno, California: 3 cones of *Araucaria*—Fresno, California (gift).

HAWES, GEORGE H., Chicago: 1 fossil cephalopod—Illinois (gift).

ILLINOIS STATE GEOLOGICAL SURVEY, Urbana, Illinois: 1 specimen novaculite—Alexander County, Illinois; 3 specimens of vitrain, clarain and fusain—Franklin County, Illinois (gift).

INNES SPEIDEN COMPANY, Chicago: 1 specimen silica; 2 specimens ground silica; 1 trilobite—Union County, Illinois (gift).

LIPMAN, ROBERT R., Chicago: 1 crystal of pyrite—Gunnison County, Colorado (gift).

MANNING, JAMES, Chicago: 1 specimen cassiterite—near Cordova, Alaska (gift).

MEYERS, ALICE C., Santa Fe, New Mexico: 1 specimen halloysite—New Mexico; 1 specimen vitrified clay—Nanking, China (gift).

McKINLEY, WILLIAM, Peoria, Illinois: 1 concretion of calcite—Death Valley, California (gift).

NININGER, PROFESSOR H. H., Denver, Colorado: etched slice of Central Wyoming meteorite; polished slice of Hobbs, New Mexico, meteorite; 1 specimen Pasamonte, New Mexico, meteorite; 1 specimen Roy, New Mexico, meteorite; 4 photographs of Bruno, Saskatchewan, Canada, meteorite (exchange).

NORTON COMPANY, THE, Worcester, Massachusetts: 1 specimen boron carbide; 5 specimens norbide—Niagara Falls, New York (gift).

OLIVER, ELIZABETH, River Forest, Illinois: 1 specimen pisolite—Braidwood, Illinois; 4 specimens minerals; 3 concretions—Paxton, Michigan (gift).

OGAKI, K., Fu-shun, Manchukuo: 1 cabochon-cut amber with insect; 25 specimens fossil leaves; 1 fragment fossil turtle—Manchukuo (gift).

ORDWAY, CHARLES A., Chicago: 2 specimens iron ore—Idaho (gift).

PHILADELPHIA QUARTZ COMPANY, Chicago: 14 specimens silicate of soda and material from which it is made (gift).

QUINN, JAMES, Chicago: 1 specimen diatomite—Nebraska (gift).

RENSHAW, JOHN A., Arcadia, California: 1 specimen iridescent agate—near Antelope, Oregon (exchange).

RYDBERG, HAROLD, Sarasota, Florida: 2 teeth of *Charcharodon*—Sarasota, Florida (gift).

SEYMOUR, DR. T. F., Mishawaka, Indiana: 1 specimen foliated talc—Huntington, Ontario (gift).

SITTERLE, A. F., Chicago: 1 double concretion—Texas (gift).

STANDARD OIL COMPANY OF INDIANA, Chicago: 84 specimens candles; 52 specimens illustrating candle manufacture; 15 dozen birthday candles; 5 pounds parawax; 1 specimen belt dressing; 1 specimen dressed leather; 1 telephone condenser—Whiting, Indiana (gift).

STANDARD OIL COMPANY OF NEW JERSEY, New York: 15 specimens containing vertebrate fossils; 3 specimens vertebrate fossils—Argentina (gift).

SULLIVAN, A. H., St. Louis, Missouri: 1 fossil fish (gift).

THOMAS, FRANK L., Bremen, Indiana: 1 native copper glacial boulder—Marshall county, Indiana (gift).

UNITED STATES NATIONAL MUSEUM, Washington, D.C.: 2 skeletons and 2 skulls of *Plesippus*—Snake River Valley, Hagerman, Idaho (exchange).

VERNON, HAROLD, Calgary, Alberta, Canada: 19 specimens trilobites; 1 specimen brachiopod—Alberta, Canada (gift).

VON DRASEK, FRANK, Cicero, Illinois: 9 quartz crystals; 1 cabochon-cut quartz; 1 cabochon-cut amethyst—Magnet Cove, Arkansas (gift).

WALTHER, HERBERT C., Chicago: 1 specimen pyrite crystals; 7 specimens fossil fern leaves—Galena and Braidwood, Illinois (gift).

WRIGHT, CHARLES, Chicago: 1 specimen *Lepidodendron*—Clinton County, Pennsylvania (gift).

WEST COAST MINERAL ASSOCIATION, Seattle, Washington: 9 specimens ore—Washington (gift).

WOODHOUSE, C. D., East Hampton, Long Island, New York: 1 specimen angelite—California; 1 specimen dumortierite—Nevada (gift); 1 specimen euhedral dumortierite; 1 specimen crystalline dumortierite—Oreana, Nevada (exchange).

DEPARTMENT OF ZOOLOGY—ACCESSIONS

ABEL, RUSSELL, Kwato, Samarai, New Guinea: 1 snake eel—Kwato, Samarai, New Guinea (gift).

ACADEMY OF NATURAL SCIENCES, Philadelphia, Pennsylvania: 7 insects—various localities (exchange).

AMERICAN MUSEUM OF NATURAL HISTORY, New York: 17 bats—Africa and South America (exchange).

ANONYMOUS: 1 partial-albino English sparrow—Illinois (gift).

AUBERT, OTTO, Webster, Wisconsin: 1 porcupine skeleton—Webster, Wisconsin (gift).

BAIRD, CHARLES, Chicago: 1 rail skeleton—Chicago (gift).

BECHARA, DR. A., Station 4, Iraq Petroleum Company, Syria: 3 bird skins—Syria (gift).

BECKER, ROBERT, Lake Bluff, Illinois: 1 beetle—St. Ignace, Michigan (gift).

BELCHER, SIR CHARLES, Port of Spain, Trinidad: 1 bird skin—British Guiana (gift).

BENESH, BERNARD, North Chicago, Illinois: 36 beetles—United States (gift).

BIGGS, REV. H. E. J., Kerman, Iran: 32 shells, 21 beetles—Iran (exchange).

BLAIR, ALBERT P., Tulsa, Oklahoma: 3 frogs—Tulsa, Oklahoma (exchange).

BLAKE, EMMET R., Chicago: 1 bird skin—Chicago (gift).

BONATI, EUGENE, Teheran, Iran: 3 scorpions, 3 solpugids—Teheran, Iran (gift).

BOULTON, RUDYERD, Chicago: 3 bird skeletons—Florida (gift).

BRITISH MUSEUM (NATURAL HISTORY), London, England: 11 frogs—various localities (exchange).

BROOKING, A. M., Hastings, Nebraska: 1 badger skin and skull—Hastings, Nebraska (exchange).

BROWER, DR. AUBURN E., Bar Harbor, Maine: 2 butterflies—Maine (gift).

BRUNDAGE, EDWARD J., Washington, Connecticut: 86 insects—Connecticut (gift).

BURNABY, MRS. A. E., Leicestershire, England: 10 mammals, 4 English adders—England (gift).

CARNEGIE MUSEUM, Pittsburgh, Pennsylvania: 163 frogs, 54 lizards, 21 snakes—various localities (exchange).

CARNEY, J. T., Marathon, Texas: 2 lizards, 2 rattlesnakes—Texas (gift).

CASCARD, BEN, Chicago: 2 insects—Miller, Indiana (gift).

CAZALY, P. R. J., Haditha, Iraq: 1 lizard—Iraq (gift).

CHASE, DR. H. D., Tulsa, Oklahoma: 6 frogs—Tulsa, Oklahoma (exchange).

CHICAGO PARK DISTRICT, Chicago: 1 polar bear skeleton (gift).

CHICAGO ZOOLOGICAL SOCIETY, Brookfield, Illinois: 9 mammals, 46 birds, including 10 emperor penguins, 60 bird skeletons, 30 lizards, 26 snakes, 2 turtles—various localities (gift).

CHILDS, L. C., Hinsdale, Illinois: 1 bufflehead duck—Lacon, Illinois (gift).

CLEAVES, HOWARD, Staten Island, New York: 1 bobwhite—Neillsville, Wisconsin (gift).

COLOMBO MUSEUM, Colombo, Ceylon: 5 turtles—(exchange).

CONOVER, BOARDMAN, Chicago: 3 bird skins, 1 bird's egg—various localities (gift).

COURSEN, C. BLAIR, Chicago: 2 frogs, 44 lizards—Key West, Florida (gift).

CRAIG, WALLACE, Brookline, Massachusetts: the James Oregon Dunn original records and natural history notes, Chicago 1887-1907 (gift).

DAVIS, D. DWIGHT, Naperville, Illinois: 1 bat, 4 salamanders, 6 toads, 8 frogs, 6 snakes, 2 turtles, 1 spider, 1

cicada—various localities (gift); 2 salamanders, 21 frogs—Foochow, China (exchange).

DEKKER, J. H., Station T-1, Iraq Petroleum Company, Iraq: 1 fox skin and skeleton, 1 badger skin and skeleton—western Iraq (gift).

DLUHY, EUGENE, Chicago: 4 beetles—United States (gift).

DUBISCH, ROY, Chicago: 1 snake—Argo, Illinois (gift).

DYBAS, HENRY, Chicago: 4 beetles, 19 snakes—various localities (gift).

EASTWOOD, AUSTIN, Bagdad, Iraq: 1 bear skeleton—Asia Minor (gift).

EIGSTI, WILLIAM E., Homewood, Illinois: 1 fox squirrel—Chicago Heights, Illinois (gift).

EMERSON, DR. ALFRED E., Chicago: 17 bats, 1 caecilian, 8 frogs, 1 lizard, 7 snakes—Panama (gift).

EXLINE, A. W., San José, Mindoro, Philippine Islands: 4 tamarao buffaloes, 1 gecko, 4 crocodile skulls, 1 beetle—Mindoro, Philippine Islands (gift).

FIELD, HENRY, Chicago: 26 mammals, 4 bear skulls, 1 bird skin, 10 frogs, 81 lizards, 38 snakes, 1,020 insects and allies—Iraq (gift).

FIELD MUSEUM OF NATURAL HISTORY: Collected by D. Dwight Davis: 14 insects—Kankakee County, Illinois.

Collected by Henry Field and Richard A. Martin (Field Museum Anthropological Expedition to the Near East, 1934): 4 mammal skeletons, 2 donkey skulls, 157 frogs and toads, 335 lizards, 76 snakes, 11 turtles, 51 fishes, 554 insects and allies, 8 shells, 5 leeches—Asia Minor.

Collected by Albert J. Franzen: 23 insects—Hopkins Park, Illinois.

Collected by Tappan Gregory and Colin C. Sanborn: 34 mammal skins and skulls, 1 mammal skin and skeleton, 20 mammal skeletons—Huron Mountain, Michigan.

Collected by Edgar G. Laybourne: 1 toad, 20 lizards, 4 snakes, 1 turtle—Moffat County, Colorado.

Transferred from Department of Anthropology: 7 fruit bat skulls—New Guinea and Philippines (gift).

Transferred from Department of N. W. Harris Public School Extension: 1 weasel skull—Deerfield, Illinois (gift); 1 cardinal—Indiana (exchange).

Purchases: 3 Weddell's seal skins and skulls; 1 crab-eating seal skin and skull—Antarctic; 9 bats—Arizona; 83 mammal skins and skulls—Costa Rica; 2 bird skins—Cuba; 175 small mammals—Ecuador; 3 gopher frogs, 10 toads, 8 lizards, 5 snakes—Florida; 3 mammals, 1 pheasant—India; 10 salamanders—Korea; 185 mammal skins with 176 skulls—Cameroon, Africa; 2,558 bird skins, 3 narwhal skins and skeletons—various localities; 1 photograph of salamander model.

FRANZEN, ALBERT J., Chicago: 1 badger skeleton—Wisconsin; 2 bird skins, 4 bird skeletons, 1 salamander skull, 11 insects—Illinois (gift).

FRIESSER, JULIUS, Chicago: 1 snow leopard skull (part)—India; 3 mammal skulls, 1 turtle, 3 fishes, 1 moth—United States (gift).

GENERAL BIOLOGICAL SUPPLY HOUSE, Chicago: 2 salamanders—Oporto, Portugal (gift).

GERHARD, WILLIAM J., Chicago: 75 insects—Illinois and Indiana (gift).

GESSWEIN, HERMAN, Chicago: 1 salamander—Guatemala (gift).

GRANT, GORDON, Los Angeles, California: 8 toads, 27 lizards, 3 snakes, 25 top minnows, 102 land shells—California (gift).

HANSON, H. C., Chicago: 1 painted turtle—Cary, Illinois (gift).

HARRIS, MRS. BARNETT, Evanston, Illinois: 62 insects—Zululand, Africa (gift).

HERZFELD, PROFESSOR ERNST, Persepolis, Iran: 5 scorpions, 1 solpugid—Persepolis, Iran (gift).

HEWITT, JOHN, Grahamstown, South Africa: 3 lizards—South Africa (gift).

HIGHLAND PARK SCHOOL, Highland Park, Illinois: 3 bird skeletons—Highland Park, Illinois (gift).

HILDEBRAND, R. D., Buncombe County, North Carolina: 1 wild turkey skin—Buncombe County, North Carolina; 4 Virginia quail—Wayne County, Mississippi (gift).

HINE, ASHLEY, Chicago: 1 mountain bluebird—Planada, California (exchange).

HODGSDON, DONALD B., Pochuta, Guatemala: 2 bird skins—Lake Atitlan, Guatemala (gift).

HODSDON, DR. L. A., Miami, Florida: 9 bats, 5 frogs, 13 lizards—Bahamas (gift).

HOFFMAN, DR. WILLIAM E., Canton, China: 8 turtles—south China (gift).

HUIDEKOPER, WALLIS, Twodot, Montana: 2 wolf skins—North Dakota (gift).

ILLINOIS STATE NATURAL HISTORY SURVEY, Urbana, Illinois: 2 earwigs—Texas (exchange).

JENNINGS, JOHN F., Chicago: 1 gazelle skull—Niger Colony, Africa; 2 mammal skulls—Alaska (gift).

JEWELL, DR. MINNA E., Harvey, Illinois: 12 fresh-water sponges—Wisconsin (gift).

KELLOGG, JOHN P., Lake Forest, Illinois: 3 salamanders—Lebanon, Virginia (gift).

KELLOGG, W. K., BIRD SANCTUARY, Kalamazoo, Michigan: 3 wild ducks—Kalamazoo, Michigan (gift).

KENNEDY, DR. WALTER P., Bagdad, Iraq: 14 insects and allies—Bagdad, Iraq (gift).

LAYBOURNE, EDGAR G., Homewood, Illinois: 5 mammal skins and 4 skulls, 4 bird skins—Colorado (gift).

LAYBOURNE, MISS PHYLLIS, Homewood, Illinois: 2 tree frogs—Dune Acres, Indiana (gift).

LETL, FRANK H., Chicago: 1 owl skeleton—Hazelcrest, Illinois; 4 box turtles, 2 seventeen-year cicadas—Sublette, Illinois (gift).

LILJEBLAD, EMIL, Chicago: 27 insects—United States (gift).

LIU, DR. C. C., Soochow, China: 2 bats, 26 frogs, 7 lizards, 8 snakes, 2 turtles—Soochow, China (gift).

LOWRIE, DONALD C., Chicago: 8 beetles—Illinois and Indiana (gift).

MANASSEH, DR. P. S., Haifa, Palestine: 1 snake—Iraq (gift).

MEISNER, RICHARD W., Chicago: 1 pink katydid—Chicago (gift).

MILLER, E. MORTON, Coral Gables, Florida: 2 toads, 4 frogs, 4 snakes—Florida (gift).

MOONEY, JAMES, Highland Park, Illinois: 1 tree snake—Chicago (gift).

MOYER, JOHN W., Chicago: 1 ring-necked pheasant—Barrington, Illinois (exchange).

MURRAY, GEORGE, Eabaul, New Guinea: 1 lizard, 10 snakes—New Britain (gift).

MUSEUM OF COMPARATIVE ZOOLOGY, Cambridge, Massachusetts: 310 bats—Canal Zone (gift); 6 salamanders, 21 frogs, 141 lizards, 31 snakes—Honduras; 6 bats—Africa and South America; 1 bat, 17 frogs, 3 lizards—Africa (exchange).

MUSEUM OF VERTEBRATE ZOOLOGY, Berkeley, California: 9 bird skeletons—various localities (exchange).

NECKER, WALTER L., Chicago: 52 salamanders, 3 toads, 2 snakes—Turkey Run, Indiana; 1 bull snake—Kankakee County, Illinois (gift).

NEITZEL, WILLIAM, Chicago: 1 tree frog, 1 milk snake, 2 beetles—Michigan and Arizona (gift).

NORRIS, PROFESSOR H. W., Grinnell, Iowa: 1 shark, 7 samples of shark skins—Englewood, Florida (gift).

ORR, PHIL C., Chicago: 2 lizards—Barren County, Kentucky (gift).

ORTENBURGER, DR. A. I., Norman, Oklahoma: 1 musk turtle—Oklahoma (gift); 82 salamanders—Oklahoma (exchange).

OSGOOD, DR. WILFRED H., Chicago: 9 small mammals—Acapulco, Mexico (gift).

PARK, DR. ORLANDO, Evanston, Illinois: 4 beetles—Illinois and Kentucky (gift).

PATTERSON, BRYAN, Chicago: 2 bird skeletons—Homewood, Illinois (gift).

PEARSALL, GORDON, River Forest, Illinois: 3 hoary bats—Maywood, Illinois (gift).

PERKINS, H. E., Huron Mountain, Michigan: 1 bobcat—Marquette County, Michigan (gift).

PERKINS, MARLIN R., St. Louis, Missouri: 13 snakes—Arkansas and Brazil (gift).

PLATH, KARL, Chicago: 1 rose-breasted grosbeak, 6 bird skeletons—Chicago (gift); 1 bird (exchange).

PRAY, LEON L., Homewood, Illinois: 2 oven-bird skins, 1 dragon-fly—Homewood, Illinois (gift).

QUINN, JAMES H., Chicago: 1 bat skeleton—Kentucky (gift).

RAY, EUGENE, Urbana, Illinois: 1 black widow spider—Eddyville, Illinois (gift).

REYNOLDS, ALBERT E., Greencastle, Indiana: 11 salamanders—Putnam County, Indiana (gift).

RICKARDS, A. R. M., Bagdad, Iraq: 1 solpugid—Bagdad, Iraq (gift).

RUECKERT, ARTHUR G., Chicago: 1 parakeet skeleton—Chicago (gift).

ST. MARY'S MISSION HOUSE, Techny, Illinois: 51 butterflies, 1 moth—New Guinea (exchange).

SAKIN, SAM, Chicago: 5 snakes, 1 turtle—Chicago region (gift).

SANBORN, COLIN C., Highland Park, Illinois: 1 white-winged scoter, 1 bird skeleton—Highland Park, Illinois; 7 snakes—Braeside, Illinois (gift).

SCHAAACK, EDWARD, Chicago: 2 mammals—Honduras; 1 snake—British Honduras (gift).

SCHMIDT, DR. ERICH F., Rayy, Iran: 1 hyena skull—Iran (gift).

SCHMIDT, F. J. W., Madison, Wisconsin: 1 fox snake, 1 painted turtle—Jackson County, Wisconsin (gift).

SCHMIDT, KARL P., Homewood, Illinois: 16 salamanders, 18 frogs, 14 snakes, 2 turtles—Illinois and Indiana (gift).

SCHOEMANN, BRUNO, Chicago: 3 snakes—Brazil (gift).

SCHULTZ, LEONARD P., Seattle, Washington: 19 fishes—various localities (exchange).

SHAW, DR. F. R. S., Haifa, Beirut, Palestine: 1 mole cricket, 33 arachnids—Palestine and Trans-Jordan (gift).

SHEDD AQUARIUM, JOHN G., Chicago: 195 fishes—Fiji; 1 octopus, 8 crustaceans, 205 fishes—Hawaiian Islands; 1 hawksbill turtle—Bahama Islands (gift).

SHUWAYHAT, DR. Y. S., Haifa, Palestine: 6 snakes, 10 scorpions—Jordan Valley, Palestine (gift).

SPRINGER, STEWART, Biloxi, Mississippi: 5 mammal skins and 6 skulls—Florida; 11 lizards—Sardinia; 110 salamanders, 96 frogs, 70 lizards, 81 snakes, 1 alligator, 11 turtles—various localities (gift).

STODDARD, HERBERT L., Thomasville, Georgia: 2 wild turkey skins—Thomasville, Georgia (exchange).

STURGIS, R. S., Indian Hill, Illinois: 1 garter snake—Indian Hill, Illinois (gift).

TALLANT, W. M., Manatee, Florida: 1 limpkin skeleton—Collier County, Florida (gift).

THOMAS, W. R., Rapid City, South Dakota: 19 mammal skulls—Rapid City, South Dakota (gift).

TURNER, DR. C. D., Athens, Georgia: 2 bats—Athens, Georgia (gift).

UNITED STATES NATIONAL MUSEUM, Washington, D.C.: 310 mammal skins and skulls, 5 bird skeletons—various countries (exchange).

UNIVERSITY OF KANSAS, Lawrence, Kansas: 3 bat skins and skulls—Barber County, Kansas (exchange).

RAYMOND FOUNDATION—ACCESSIONS

CHICAGO, MILWAUKEE, ST. PAUL AND PACIFIC RAILWAY: 21 reels of 35-mm. silent film (gift).

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FIELD MUSEUM OF NATURAL HISTORY: Made by Division of Photography: 32,000 prints, 1,302 negatives, 455 lantern slides, 188 enlargements, and 44 transparent labels.

Developed for expeditions: 1,116 negatives.

UPSON, E. D., Madison, Wisconsin: 2 photographs of beaver work—Wisconsin (gift).

VACIN, E. F., Oak Park, Illinois: 3 trout—Laramie, Wyoming (gift).

VILLALBA, GASTON S., Havana, Cuba: 13 bird skins—Cuba (exchange).

WACHOWSKI, DR. CHESTER, Chicago: 1 mantis—Chicago (gift).

WADDINGTON, DAVID and HUBERT BEDDOES, Chicago: 5 horned toads—Westcliff, Colorado (gift).

WALPOLE, STEWART, Chicago: 10 bats, 11 frogs, 7 toads, 9 lizards—Barbados, West Indies; 2 sharks—Bermuda (gift).

WEBER, WALTER A., Austin, Texas: 1 Texas fence lizard—Mt. Emory, Texas (gift).

WEED, ALFRED C., Chicago: 4 salamanders—North Rose, New York (gift).

WENZEL, RUPERT, Chicago: 37 insects—United States (gift).

WHEELER, LESLIE, Lake Forest, Illinois: 479 bird skins, 1 bird skeleton, 2 insects—various countries (gift); 2 hawks—eastern Panama (exchange).

WHITNEY, W. R., Chicago: 2 bird skeletons—Chicago (gift).

WOLCOTT, ALBERT B., Downers Grove, Illinois: 15 insects—Illinois and Mexico (gift).

WYATT, ALEX K., Chicago: 3 moths—Chicago (gift).

ZOOLOGISCHE SAMMLUNG DES BAYERISCHEN STAATS, Munich, Germany: 11 salamanders, 4 frogs, 6 lizards, 8 snakes, 1 crocodile, 2 turtles—various localities (exchange).

FIELD MUSEUM OF NATURAL HISTORY: From Division of Photography: 314 slides.

From Field Museum Archaeological Expedition to the Near East (made by Richard A. Martin): 36 negatives of natives, taken in Iraq.

NICHOLS, HENRY W., Chicago: 256 negatives (made during period from 1892 to 1916) of general views in Can-

ada and the United States: 89 negatives of general views in the Yellowstone and the Canadian Rockies.

SMEATON, MISS WINIFRED, Ann Arbor, Michigan: 206 negatives of natives of Iraq.

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| <i>Canadian Mining Journal</i> , Gardenvale, Canada. | Inspector of Mines, Boise, Idaho. |
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Victor News, Chicago.

Wellcome Research Institute, London, England.

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Breuil, Abbé Henri, Paris, France.

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Mathey, Robert.

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 Cox, Mrs. Rensselaer W.
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 Howard J.
 Cunningham, John T.
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 Jr.
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 Cushman, Barney
 Cutler, Henry E.
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 Davidonis, Dr.
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 Davis, Abel
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 Davis, Brode B.
 Davis, C. S.
 Davis, Dr. Carl B.
 Davis, Frank S.
 Davis, Fred M.
 Davis, James
 Davis, Dr. Loyal
 Davis, Dr. Nathan
 S., III
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 Deahl, Uriah S.
 Decker, Charles O.
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 DeDardel, Carl O.
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 Deery, Thomas A., Jr.
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 Dick, Elmer J.
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 Dickinson, F. R.
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 Eckhart, Percy B.
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- Howe, Warren D.
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 Huston, Ward T.
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 Judah, Noble Brandon
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 Lueder, Arthur C.
 Luehr, Dr. Edward
 Lufkin, Wallace W.
 Luria, Herbert A.
 Lurie, H. J.
 Lustgarten, Samuel
 Lutter, Henry J.
 Lydon, Mrs. William A.
 Lyford, Harry B.
 Lynch, William Joseph
 Lyon, Charles H.
 Lyon, Frank R.
 Lyon, Mrs. Thomas R.

Maass, J. Edward
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 MacDougal, Mrs. T. W.
 Mackey, Frank J.
 Mackinson, Dr. John C.
 MacLeish, Mrs. Andrew
 MacLellan, K. F.
 Magan, Miss Jane A.
 Magill, Henry P.
 Magill, Robert M.
 Magnus, Albert, Jr.
 Magnus, August C.
 Maher, Mrs. D. W.
 Main, Walter D.
 Malone, William H.
 Manaster, Harry
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 Mandel, Edwin F.
 Mandel, Mrs. Emanuel
 Mandel, Miss Florence
 Mandel, Mrs. Robert
 Manegold, Mrs. Frank W.
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 Manierre, Louis
 Manley, John A.
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 Mann, John P.
 Manson, David
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 Marks, Arnold K.
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 Marsh, A. Fletcher
 Marsh, John
 McWilliams, II
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 Martin, Samuel H.
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 Marx, Frederick Z.
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 Massey, Peter J.
 Masterson, Peter
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 Matson, J. Edward
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 Chauncey
 McCormick, Fowler
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 McDougall, Mrs.
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 McGurn, Mathew S.
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 McMillan, W. B.
 McMillan, William M.
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 Morton, William Morris
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 Mowry, Louis C.
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 Oppenheimer, Julius
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 Orr, Thomas C.
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 Roberts, John M.
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 Munsell
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 Rodman, Thomas Clifford
 Roehling, C. E.
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 Otto G.
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 Rogers, Miss Annie T.
 Rogers, Bernard F., Jr.
 Rogers, Dr. Cassius C.
 Rogers, Joseph E.
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 Romer, Miss Dagmar E.
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 Rosen, M. R.
 Rosenbaum, Mrs.
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 Rosenfeld, Mrs. Maurice
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 Morris S.
 Rosenfield, William M.
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 Rosenthal, James
 Rosenthal, Kurt
 Rosenthal, Lessing
 Rosenwald, Richard M.
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 Ross, Thompson
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 Hochsinger
 Rothacker, Watterson R.
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 Rothschild, Maurice L.
 Rothschild, Melville N.
 Routh, George E., Jr.
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 Sandidge, Miss Daisy
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 Santini, Mrs. Randolph
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 Sargent, John R. W.
 Sargent, Ralph
 Sauter, Fred J.
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 Sawyer, Dr. Alvah L.
 Schacht, John H.
 Schaffer, Dr. David N.
 Schaffner, Mrs. Joseph
 Schaffner, Robert C.
 Scheidenheim, Edward L.
 Scheinman, Jesse D.
 Schermerhorn, W. I.
 Schlake, William
 Schmidt, Dr. Charles L.
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 Schmitz, Dr. Henry
 Schmitz, Nicholas J.
 Schneider, F. P.
 Schnering, Otto Y.
 Schnur, Ruth A.
 Scholl, Dr. William M.
 Schram, Harry S.
 Schreiner, Sigurd
 Schroeder, Dr. George H.
 Schukraft, William

Schulman, A. S.
 Schulze, Mrs. Mathilde
 Schulze, William
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 J., Jr.
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 Schwartz, Charles K.
 Schwartz, Charles P.
 Schwarz, Herbert E.
 Schwarzhaupt, Emil
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 Sears, Richard W., Jr.
 Seaver, Andrew E.
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 Seaverns, Louis C.
 See, Dr. Agnes Chester
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 Seeburg, Justus P.
 Seifert, Mrs. Walter J.
 Seip, Emil G.
 Seipp, Clarence T.
 Seipp, Edwin A.
 Seipp, William C.
 Sello, George W.
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 Seng, V. J.
 Senne, John A.
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 Shaffer, Carroll
 Shaffer, Charles B.
 Shambaugh, Dr. George E.
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 Shannon, Angus Roy
 Shapiro, Meyer
 Sharpe, N. M.
 Shaw, Alfred P.
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 Shaw, Theodore A.
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 C., Sr.
 Shields, James Culver
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 Shoan, Nels
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 Shumway, Mrs. Edward
 DeWitt

Sidley, William P.
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 Sigman, Leon
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 Silberman, David B.
 Silberman, Hubert S.
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 White
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 Snyder, Harry
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 Soravia, Joseph
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 Straus, Melvin L.
 Straus, S. J. T.
 Strauss, Dr. Alfred A.
 Strauss, Henry X.
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- Taft, John H.
 Taft, Mrs. Oren E.
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 Terry, Foss Bell
 Teter, Lucius
 Thatcher, Everett A.
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 Thomas, Frank W.
 Thomas, Mrs. Harry L.
 Thomas, Dr. William A.
 Thompson, Arthur H.
 Thompson, Charles E.
 Thompson, Charles F.
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 Thompson, Fred L.
 Thompson, Floyd E.
 Thompson, Dr. George F.
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 Tilden, Louis Edward
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 Touchstone, John
 Henry
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- Towler, Kenneth F.
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 Tripp, Chester D.
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 Trowbridge, Raymond W.
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 Turner, Tracy L.
 Tutthill, Mrs. Beulah L.
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 Tuttle, Henry
 Emerson
 Tuttle, Mrs. Henry N.
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 Ullmann, Herbert S.
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 Valentine, Mrs.
 May L.
 Valentine, Patrick A.
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 VanCleaf, Paul
 VanDeventer, Christopher
 VanNess, Gardiner B.
 VanSchaack, R. H., Jr.
 VanSchaick, Gerard
 VanWinkle, James Z.
 VanZwoil, Henry B.
 Vaughan, Leonard H.
 Vawter, William A., II
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 Vehe, Dr. K. L.
 Vehon, Morris
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 VonGlahn, Mrs. August
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 Wagner, John E.

- Walgreen, Mrs. *
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 Hempstead, Jr.
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